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OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

January 16, 1979

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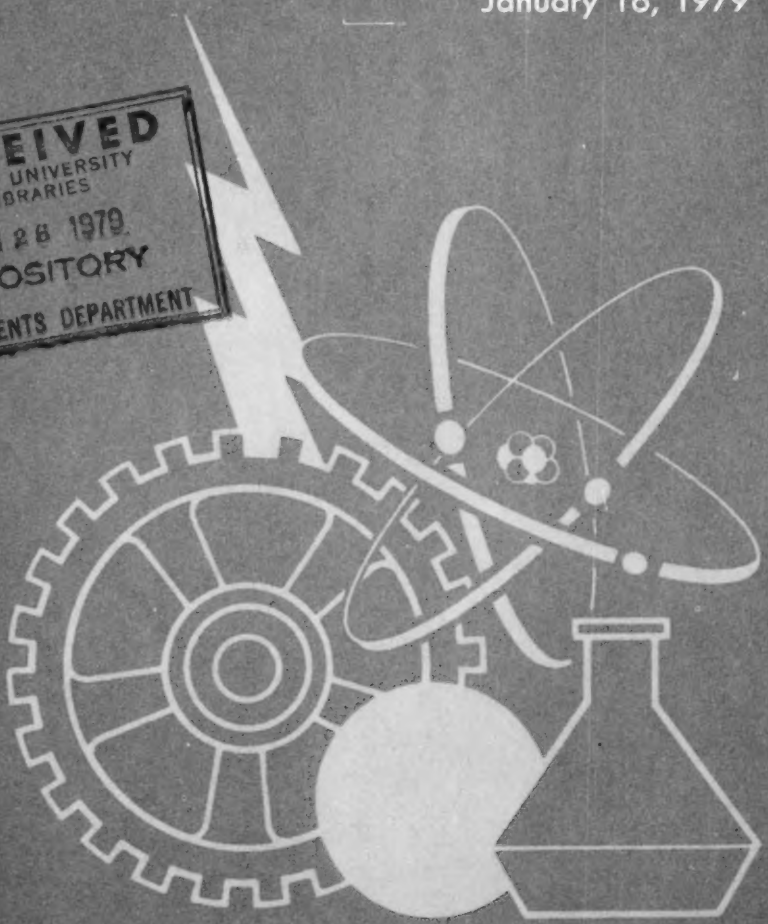

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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

January 16, 1979 Volume 978 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT including the amounts of the fees thereunder and the States that may be designated in International applications consult the Notice entitled "Patent Cooperation Treaty (PCT) : Information for Prospective Applicants" appearing in the OFFICIAL GAZETTE of October 3, 1978.

DONALD W. BANNER.
Nov. 7, 1978. *Commissioner of Patents and Trademarks.*

National Inventors Day

The Patent and Trademark Office, along with the National Council of Patent Law Associations, will co-sponsor National Inventors Day in the Public Search Room on Saturday, February 10, from 1 :00 p.m. to 5 :00 p.m. and Sunday, February 11, 1979 from 10 :30 a.m. to 5 :00 p.m. The public is invited to view the exhibits on these days and to attend the dedication of the National Inventors Hall of Fame and the induction of four inventors into the Hall of Fame at 1 :00 p.m. on Sunday, February 11.

In order to accommodate the exhibits, it will be necessary to close the Public Search Room at 5 :00 p.m. on Friday, February 9, 1979.

We would appreciate the cooperation of all users of the Search Room facilities by removing all personal properties and items for the early closing.

LUTRELLE F. PARKER,
For DONALD W. BANNER,
Dec. 7, 1978. *Commissioner of Patents and Trademarks.*

Use of Symbol "Ø" in Patent Applications

The Greek letter Phi has long been used as a symbol in equations in all technical disciplines. It further has special uses which include the indication of an electrical phase or clocking signal as well as an angular measurement. The recognized symbols for the upper and lower case Greek Phi characters, however, do not appear on most typewriters. This apparently has led to the use of a symbol composed by first striking a zero key and then backspacing and striking the "cancel" or "slash" key to result in "Ø" which is an approximation of accepted symbols for the Greek character Phi. In other instances the symbol is composed using the upper or lower case letter "O" with the "cancel" or "slash" superimposed thereon by backspacing or is simply handwritten in a variety of styles. These expedients result in confusion because of the variety of type sizes and styles available on modern typewriters.

In recent years, the growth of data processing has seen the increasing use of this symbol ("Ø") as the standard representation of zero. The "slashed" or "cancelled zero" is used to indicate zero and avoid confusion with the upper case letter "O" in both text and drawings.

Thus, when the symbol "Ø" in one of its many variations, as discussed above, appears in patent applications being prepared for printing, confusion as to the intended meaning of the symbol arises. Those (such as examiners, attorneys, and applicants) working in the art can usually determine the intended meaning of this symbol because of their knowledge of the subject matter involved, but editors preparing these applications for printing have no such specialized knowledge and confusion arises as to which symbol to print. The result, at the very least, is delay until the intended meaning of the symbol can be ascertained.

Since the Office does not have the resources to conduct a technical editorial review of each application before printing, and in order to eliminate the problem of printing delays associated with the usage of these symbols, any question about the intended symbol will be resolved by the editorial staff of the Office of Publications by printing the symbol "Ø" whenever that symbol is used by the applicant. Any Certificate of Correction necessitated by the above practice will be at the patentee's expense (37 CFR 1.323) because the intended symbol was not accurately presented by the Greek upper or lower case Phi letters (Φ, ϕ) in the patent application.

RICHARD J. SHAKMAN,
Dec. 20, 1978. *Assistant Commissioner for Administration.*

Advisory Opinions on Validity of Patents

[37 CFR PART 1]

Notice of Proposed Rulemaking

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: Patent and Trademark Office proposes a procedure for giving advisory opinions to members of the public on questions of validity of United States patents arising after the issuance of the patents. Opinions would be limited to questions of patentability in light of prior patents and publications. The person requesting the opinion would have to submit certain information and pay a $500.00 fee. The owner of the patent and other members of the public could submit information before the advisory opinion was issued.

DATES: Written comments by April 11, 1979. Hearing: April 11, 1979, beginning at 1 :30 p.m.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Building 3, Room 11E10, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3.

FOR FURTHER INFORMATION CONTACT: Mr. Herbert C. Wamsley by telephone at (703) 557-3071, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: INTRODUCTION. The Patent and Trademark Office is considering amendments to the patent rules of practice. The amendments being considered will allow any member of the public to bring prior art patents and publications relevant to a patent to the attention of the Office at any time and have the Office provide an advisory opinion on the effect of that prior art on the patent. The proposed rule change, therefore, would expand the opportunities for the public to bring information concerning the validity of issued patents to the attention of the Office. One study has found that between 76 and 88 percent of patents held invalid are so held at least inpart on grounds which were either outside the knowledge of the Office, or did not involve the evaluation of all of the same prior art considered by the Office.[1] The main purpose of the present proposal is to permit the public to bring prior art to the attention of the Office which was not, as far as the record shows, considered by the Office before granting the patent.

Under the procedures being proposed, any person could request an opinion from the Office on the validity of an issued patent in view of prior patents or publications. The person would submit the prior art and a fee of $500.00, together with an explanation of why the patent is believed invalid in whole or in part in view of the submitted art. Requests for advisory opinions would be served on the owner of record of the patent. The request would be announced in the Patent and Trademark Office's weekly OFFICIAL GAZETTE. The Office would give the patent owner time to respond in writing before rendering its opinion. Comments timely submitted by other members of the public also would be considered.

Courts would not be bound by advisory opinions. The ultimate decision as to validity would, under existing law, remain with the court. Under the proposal, however, the court would have an opportunity to consider the Office's opinion on prior art that the court otherwise would be called upon to evaluate in the first instance.

[1] G. Koenig, Patent Invalidity : A Statistical and Substantive Analysis (1974), at p. 1-6.

PROPOSED SECTION 1.294

The main provisions of the proposal are in new § 1.294. Subparagraph 1.294(a) states that any person may request an advisory opinion from the Office. The person could be an attorney or agent requesting an opinion without identifying the client. In the case of a request containing information which included affidavits or declarations, the affiant or declarant of course would have to be identified. Inventors and patent owners could request advisory opinions on their own patents when they preferred this over the filing of a reissue application. An advisory opinion could be requested at any time during the life of the patent, and in appropriate cases even after expiration of the patent.

The first sentence of § 1.294(a) limited advisory opinions to questions of patentability in light of prior patents or publications. "Prior patents or publications" is limited to United States patents, foreign patents, inventor's certificates, and publications which could serve to invalidate a patent under 35 U.S.C. § 102 or § 103. It is anticipated that most requests for advisory opinions would be based on prior art not considered previously by the Office. However, the Office would not refuse requests for advisory opinions based on prior art already considered by the Office. Advisory opinions would not be given on questions of, for example, prior public use or sale (35 U.S.C. § 102), fraud or failure to comply with the duty to disclose material information to the Office (37 C.F.R. § 1.56), or inadequate disclosure of the invention in the specification (35 U.S.C. § 112).

The person requesting the validity opinion would have to comply with all requirements listed in items (1) to (4) of § 1.294(a). Item (1) requires an identification of the specific claims on which an opinion is sought. Item (2) requires a prior art statement which would include a listing of the prior art, copies of the art, and an explanation setting forth why each of the claims is believed invalid.

Item (3) requires a fee for an advisory opinion on patent validity. The amount of the fee, which is set forth in § 1.21, is $500.00; under existing law the fee would be paid into the general treasury.[2]

Item (4) in proposed § 1.294(a) requires the person requesting the advisory opinion to serve a copy of the request upon the patent owner of record or upon the owner's attorney or agent. This requirement is similar to the requirement in existing § 1.291 for service of protests concerning pending patent applications. In the event service upon the owner or the owner's attorney or agent is not possible, a duplicate copy of the request and prior art materials must be submitted to the Office. If the Office is unable to serve the duplicate copy of the request, an effort will be made to notify the owner by notice in the OFFICIAL GAZETTE.

The last sentence of § 1.294(a) makes clear that the Office can refuse requests for advisory opinion. The sentence would enable the Office, for example, to refuse requests in cases of apparent harassment of the patentee. For instance, a request could be refused if an advisory opinion had been given on the same patent before and the newly cited art obviously was no more relevant than that already considered.

As provided in proposed § 1.294(b), requests for validity opinions would be announced in the OFFICIAL GAZETTE. The second sentence of this subparagraph explains what information would appear in the OFFICIAL GAZETTE announcement. The announcement would be similar to the one prescribed by 37 C.F.R. 1.11(b) for reissue patent applications. While all information from members of the public would be considered if timely received, information should be submitted within two months after the announcement of the request for validity opinion in the OFFICIAL GAZETTE in order to insure consideration. Members of the public would be expected to serve on the patent owner copies of all papers submitted to the Office.

Proposed § 1.294(c) permits the patent owner to file a response within three months after the requests or two months after the OFFICIAL GAZETTE announcement, whichever is later. In order to avoid possible harassment through the filing of voluminous paperwork, ordinarily no further papers would be permitted after the request for an opinion and the owner's response. The owner could choose to submit no response at all, in which case the Office would base its decision on the information and arguments submitted by the person requesting the opinion.

Proposed § 1.294(d) makes clear that the patent owner could respond by filing a reissue application. If a reissue application was filed within the response period, the Office would not render an advisory opinion but instead would proceed with the examination of the reissue application. If a reissue was filed, the person who had requested the advisory opinion would be treated as a protestor against the reissue application, and would be provided with copies of all Office actions in the reissue application and be permitted to respond to them.

Except for the fact that the patent owner would not be able to amend the claims in the absence of a reissue, it is expected that the procedures for rendering an advisory opinion would be very similar to the procedure followed by the Office with respect to protested reissue applications. The last sentence of § 1.294(d) makes clear that an owner who elected not to respond by filing a reissue application would still have the right to file for a reissue later.

Proposed § 1.294(e) explains the content of an advisory opinion and the manner of announcing the opinion and distributing copies. It is anticipated that the same employees would give advisory opinions who handle protested patent applications. Under current practice protests based on prior patents or publications are handled by patent examiners in the regular examining groups. The Commissioner invites public comments on whether an advisory opinion should be given by the same examiner who issued the patent.

Advisory opinions would not be appealable. Proposed § 1.294(f) states that there is no appeal by either the patent owner or the person requesting the advisory opinion. Patent owners could obtain the right to appeal adverse decisions to the Board of Appeals and the courts by filing reissue applications, either in response to advisory opinion requests or after advisory opinions were issued. Public comments are welcomed on whether some form of direct review of advisory opinions within the Office also should be made available. While an advisory opinion would not be an adverse decision on a patent application appealable to the Board of Appeals under 35 U.S.C. 7, the Commissioner has authority to delegate other functions to the members of the Board.[3]

The advisory opinion procedure would change the Office's longstanding policy[4] of not commenting on the possible invalidity of a patent. However, the Office would continue to refrain from commenting on the validity of patents other than in connection with advisory opinions under § 1.294 or reissue applications.

RELATED CHANGES

Proposed § 1.21 would add a new item specifying the amount of the fee for an advisory opinion on validity. This fee would be prescribed under the authority of 35 U.S.C. 41(b) for a service furnished by the Patent and Trademark Office for which no fee is specified by law.

The amendments in § 1.291 and the addition of new § 1.293 are not substantive changes. Amended § 1.291 pertains only to protests against pending applications. The provisions concerning prior art citations in the files of issued patents are moved from § 1.291 to § 1.293, to be adjacent new § 1.294 which also pertains to issued patents. Paragraph 1.293 permits members of the public to place in a patent file written material which is relevant to the validity of the patent. The written materials may concern issues other than prior patents and publications.

ALTERNATIVES CONSIDERED

Consideration was given to proposing advisory opinion for all types of issues of patent validity. Under this alternative, advisory opinions would have been given on questions of public use, fraudulent procurement of the patent, inadequate disclosure of the invention, and the like. The Office has conducted public use proceedings under 37 C.F.R. § 1.292 for many years. More recently, and particularly since the 1977 amendments to the reissue and protest rules, the Office has been examining a significant number of protested applications involving issues of fraudulent procurement that previously

[2] H. R. 13628 and S. 3615, 95th Congress, 2nd Sess., if enacted would have authorized the Patent and Trademark Office to use the fee income to support the expense of providing advisory opinions.

[3] *Watson* v. *Bruns*, 239 F. 2d 948, 111 USPQ 325 (D.C. Cir. 1956).

[4] Manual of Patent Examining Procedure, § 1701; *United States* v. *General Electric Co.*, 183 USPQ 551, 553 (Comm'r Pat. 1974); *Ex parte Overstrom*, 1903 C.D. 263, 264 (Comm'r Pat. 1903).

would have been left to the courts. Nonetheless, it is believed the advisory opinion procedure should be limited to questions involving prior patents and publications, at least at the present time. A broader advisory opinion procedure would be more expensive for the Office to administer and would require an assignment of an impermissible number of person-hours. Public comments are invited, however, on whether advisory opinions should be provided on issues of patent validity other than prior patents and publications.

Consideration also has been given to a voluntary protest procedure prior to issuance of a patent, similar to the experiments undertaken by the Patent and Trademark Office in 1974 and 1975 with a limited number of applications.[5] Under a pre-issuance protest procedure, however, competitors might have to file protests before learning whether they had any real economic interest in the invention. Also, such a procedure would entail greater publication costs and would delay the issuance of patents.

Finally, consideration has been given to the possibility of permitting members of the public to file reissue applications on behalf of patentees as a way to obtain a ruling on validity. It is concluded, however, that the statute requires reissue applications to be filed by the inventor or assignee, since an oath by the inventor or assignee is required and a patent may not be reissued without the surrender of the original patent.[6]

RULEMAKING AUTHORITY

The advisory opinion procedure is proposed under the Commissioner's authority in § 6 of Title 35 of the United States Code to "establish regulations, not inconsistent with law, for the conduct of proceedings of the Patent and Trademark Office." The advisory opinion of proposed § 1.294 is not tantamount to cancellation of a patent. A patentee would still have the right to sue for infringement or to license the patent even if the Office advised that some or all of the claims were invalid. Several federal agencies issue advisory opinions.[7] It is "not inconsistent with law" for the Patent and Trademark Office to advise the public on whether it believes its decision in issuing a patent is consistent with prior patents or publications brought to its attention. Courts have often held that the statutory presumption or validity is weakened where the prior art considered by the court to be pertinent was apparently not considered by the Office. The advisory opinion procedure should operate to enhance the presumption of patent validity established by 35 U.S.C. 282.

RULES PROPOSED

Notice is hereby given that, pursuant to the authority contained in § 6 of Title 35 of the United States Code, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§ 1.21 and 1.291 and adding §§ 1.293 and 1.294. The Patent and Trademark Office has determined that these rule changes have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044. In the text of the rules below, additions are shown by arrows and deletions are shown by brackets. It is proposed to amend Title 37 of the Code of Federal Regulations, Chapter I, Part 1, as follows:

1. By amending § 1.21 by adding a new item (1) to read as follows:

§ 1.21 *Patent and miscellaneous fees and charges.*

* * * * *

►(l) For rendering an advisory opinion on the validity of a patent ----------$500.00.◄

2. By amending § 1.291 to read as follows:

PROTESTS AND ►POST-ISSUANCE PROCEDURES◄ [PUBLIC USE PROCEEDINGS]

§ 1.291 *Protests* ►*against pending applications*◄ [*and prior art citations by public*].

(a) Protests ►by the public◄ against pending applications will be acknowledged and referred to the examiner having charge of the subject matter involved. A protest specifically identifying the application to which the protest is directed will be entered in the application file and, if timely submitted and accompanied by a copy of each prior art document relied upon, will be considered by the examiner.

[(b) Citations of prior art and any papers related thereto may be entered in the patent file after a patent has been granted, at the request of a member of the public or the patentee. Such citations and papers will be entered without comment by the Patent and Trademark Office.]

►(b)◄ [(c)] Protests [and prior art citations] by the public and accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant [or patentee] or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible.

3. By adding new § 1.293 to read as follows:

►§ 1.293 *Prior art citations in patent files.*◄

►(a) Citations of prior art or other papers concerning the validity of a patent may be entered in a patent file after the patent has been granted, at the request of a member of the public or the patentee. The Office will comment on such citations or papers only when an advisory opinion is requested pursuant to § 1.294.◄

►(b) Such citations or papers should be served upon the patent owner of record or upon the owner's attorney or agent, or be filed in the Office in duplicate in the event service is not possible.◄

4. By adding new § 1.294 to read as follows:

►§ 1.294 *Advisory opinions on patent validity.*◄

►(a) Any person may request an advisory opinion from the Commissioner on the validity of claims of a United States patent in view of prior patents or publications. The requester of the opinion must: (1) identify the claims of the patent on which an opinion is sought; (2) submit a prior art statement containing the information specified in § 1.98 and explaining why each of the claims is believed invalid; (3) remit the required fee (see § 1.21); and (4) state that a copy of the request has been served upon the patent owner or a duplicate copy filed as prescribed by § 1.293(b). The Commissioner reserves the right to refuse requests for advisory opinions at his discretion.◄

►(b) Requests for advisory opinions will be announced in the OFFICIAL GAZETTE. The announcement shall include at least the patent number, title, class and subclass, name of the inventor, name of the owner of record, name of the attorney or agent of record, and, if known, name of the requester of the opinion. Any information submitted by any member of the public which is timely received will be considered in the course of providing an advisory opinion. Papers from members of the public should be served upon the patent owner or filed in duplicate as prescribed by § 1.293(b).◄

►(c) The patent owner may file a response in the Office within three months after service of the request for opinion, or two months after the OFFICIAL GAZETTE announcement, whichever it later. The time for response may be extended by the Commissioner upon a showing of sufficient cause. The patent owner and the requester of the opinion may file further papers only with the approval of the Commissioner.◄

►(d) The patent owner's response may be the filing of a reissue application pursuant to § 1.175. A reissue application filed in response to an advisory opinion request, or one already on file, will be examined in lieu of rendering an advisory opinion. The advisory opinion request will be treated as a protest against the reissue application. This paragraph does not preclude the filing of a reissue application after an advisory opinion is rendered.◄

►(e) An advisory opinion shall state whether each of the claims identified by the requester is believed valid or invalid in view of the prior patents or publications submitted by the requester, and may discuss other prior patents or publications if deemed appropriate. Advisory opinions will be announced in the OFFICIAL GAZETTE; the claims considered valid and the claims considered invalid will be listed. Copies of advisory opinions will be entered in the patent file and mailed to the patent owner and the requester.◄

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[5] The results of the two Trial Voluntary Protest Programs were published at 939 O.G. 2, October 7, 1975, and 956 O.G. 2, March 1, 1977.

[6] 35 U.S.C. 251.

[7] E.g., Federal Trade Commission, 16 C.F.R. §§ 1.1–1.4; Department of Justice, 28 C.F.R. § 60.6. See generally M. Asimow, Advice to the Public from Federal Administrative Agencies (1973).

►(f) There shall be no appeal from an advisory opinion by either the patent owner or the requester of the opinion.◄

Oct. 30, 1978.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

Approved: Dec. 13, 1978.

JORDAN J. BARUCH,
Assistant Secretary for Science and Technology.

[The foregoing Notice of Proposed Rulemaking was submitted to the Federal Register for publication and was published as FR Doc. 78-35321 in the Federal Register of Wednesday, December 20, 1978, 43 F.R. 59401].

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

3,024,805, B. M. Horton, NEGATIVE FEEDBACK FLUID AMPLIFIER; **3,122,165,** same, FLUID-OPERATED SYSTEM; **3,185,166,** Horton and Bowles, FLUID OSCILLATOR; **3,396,619,** Bowles and Warren, FLUID AMPLIFIER EMPLOYING BOUNDARY LAYER EFFECT; **3,439,695,** P. Bauer, FLUID-DRIVEN MECHANISM, **filed** Aug. 11, 1977, D.C., Md. (Baltimore), Doc. HM-77-1331, *Bowles Fluidics Corp.* v. *Sears, Roebuck and Company.* Count I—Patent infringement of the complaint is hereby dismissed on the ground that the same has been settled and satisfied, May 18, 1978.

3,064,669, W. L. Sheppard, GOVERNOR; **3,133,610,** same, SPEED GOVERNING SYSTEM, **filed** Nov. 14, 1978, D.C., E.D. Mich. (Detroit), Doc. 78-72928, *Rex Industries, Inc.* v. *Dana Corp.* **Same, filed** Nov. 14, 1978, D.C., E.D. Mich. (Detroit), Doc. 78-72927, *Rex Industries* v. *American Motors Corp.*

3,104,799, D. J. Steidinger, ENVELOPE ASSEMBLY, **filed** Apr. 21, 1976, D.C. N.D. Ill. (Chicago), Doc. 76c1501, *Uarco Inc.* v. *The Standard Register Co.* Defendant's counterclaims is dismissed with prejudice, Nov. 9, 1978.

3,133,610. (See 3,064,669.)

3,122,165. (See 3,024,805.)

3,185,166. (See 3,024,805.)

3,303,594, K. R. Lewis, FIREARM BARREL SHROUD FRAME AND CYLINDER CONSTRUCTION; **3,633,302,** same, CYLINDER MECHANISM FOR REVOLVER-TYPE FIREARMS; **3,683,535,** same, HANDGUN GRIP CONSTRUCTION, **filed** Dec. 23, 1974, D.C. Conn. (Hartford), Doc. H-74-400, *Richard S. Pastore* v. *The Leisure Group, Inc.* Stipulation and order of dismissal filed on May 23, 1978.

3,337,681, D. J. Smith, SPLICE CASE; **3,692,926,** same, ALIGNABLE END SEALS FOR A SPLICE CASE, **filed** May 1, 1978, D.C., N.D. Ohio (Cleveland), Doc. C-78-505, *Preformed Line Products Company* v. *Western Electric Company, Inc.*

3,325,823, D. J. Boon, MANUFACTURE OF FOAM MATERIAL, **filed** June 20, 1978, D.C. N. Dak. (Bismarck), Doc. A78-4017, *Edge Industries, Inc.* v. *Uniform AG.* Case transferred from District of North Dakota to Northern District of Indiana at South Bend, Ind., Oct. 31, 1978.

3,351,033, J. E. Kienel, APPARATUS AND METHOD FOR SEAMING HOSIERY BLANKS, **filed** Oct. 19, 1978, D.C., W.D.N.C. (Statesville), Doc. ST-C-78-54, *Speizman Industries* v. *Hickory Foundry and Machine Company.*

3,367,370, C. J. Sherlock, PLASTIC PIPE CONSTRUCTION, **filed** Nov. 7, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4388, *Western Packing and Supply Co.* v. *Northern Illinois Gas Company.*

3,396,619. (See 3,024,805.)

3,439,695. (See 3,024,805.)

3,452,851, L. Holmes, Jr., TYPEWRITER BASEPLATE ENABLING MACHINE OPERATION BY AND GENERATION OF ELECTRICAL SIGNAL, **filed** Apr. 5, 1974, D.C. Del. (Wilmington), Doc. 74-65, *Tycom Corp.* v. *Redactron Corporation and Sperry Rand Corp.* That this action is hereby dismissed, Nov. 3, 1978.

3,478,402, Schmude and Pohler, METHOD OF MAKING A WIRE RACE FOR ANTIFRICTION BEARING; same, **3,802,755,** Schluter and Pohler, TWO-ROW ANTIFRICTION BEARING, **filed** Oct. 19, 1978, D.C., S.D.N.Y., Doc. 78-C-4972, *Keene Corp.* v. *Hoesch Werke Aktiengesellschaft.*

3,504,818, H. Crisci, TAMPER PROOF BOTTLE CLOSURE, **filed** Oct. 27, 1978, D.C., W.D. Pa. (Pittsburgh), Doc. 78-1234, *Northern Engineering & Plastics Corp.* v. *Roger Eddy, doing business as Marshall Mfg. Inc.*

3,506,089, M. C. Junger, SOUND ABSORPTIVE STRUCTURAL BLOCK; **3,837,426,** K. Kleinschmidt, same; **3,866,001,** Kleinschmidt and Proudfoot, STRUCTURAL BLOCK WITH SEPTUM, **filed** Nov. 8, 1978, D.C., S.D.N.Y., Doc. 78-C-5327 (WK), *The Proudfoot Company, Inc.* v. *Warren Sales Corp. et al.* **Same, filed** Aug. 9, 1978, D.C. Mass. (Boston), Doc. 79-2024-T, *Miguel C. Junger and the Proudfoot, Inc.* v. *Pascale Block Co., Inc. and Robert M. Pascale.*

3,521,017, P. Oulianoff, ELECTRICAL SWITCH MECHANISM, **filed** Nov. 9, 1978, D.C. Nebr. (Omaha), Doc. CV78-0-489, *LeBron International Inc.* v. *CAB Enterprises, Inc. Hot Foods, Inc. and Claude Blanc.*

3,563,638, W. A. Panozzo, MIRROR ASSEMBLY HAVING A TWO-PIECE MOLDING, **filed** Nov. 2, 1978, D.C., S.D. Fla. (Miami), Doc. 78-6474-C-SMA, *Sure Plus Manufacturing Co.* v. *Hy Kobrin and Kobrin Mfg. Inc.*

3,633,302. (See 3,303,594.)

3,634,657, Ballard and Rogers, ELECTRONIC READER MEANS FOR MAGNETIC CREDIT CARDS AND THE LIKE, **filed** Mar. 10, 1978, D.C., E.D. Mich. (Detroit), Doc. 78-70549, *Automatic Parking Devices Inc.* v. *A-T-O Inc.* Consent judgment, Nov. 9, 1978.

3,645,587, B. G. Parker, DRILL STRING MEMBER AND METHOD FOR MANUFACTURE, **filed** Nov. 16, 1978, D.C., W.D. La. (Shreveport), Doc. 781482, *Tri-Collar Inc.* v. *Reamco Inc.*

3,683,535. (See 3,303,594.)

3,692,926. (See 3,337,681.)

3,699,815, L. K. Holbrook, IMPROVEMENTS IN BODY FLUID COLLECTION BOTTLE, **3,811,485,** same, VALVE AND RELATED STRUCTURE FOR VACUUM OPERATED LIQUID-FILL BOTTLES, **Re. 29,321,** same, FLUID COLLECTION BOTTLE AND IMPROVEMENTS THEREIN, **filed** Sept. 27, 1978, D.C. Utah (Salt Lake City), Doc. C-78-0362, *Medical Development Corporation* v. *American Hospital Supply Corporation.*

3,782,868, J. A. LeBlanc, Jr., ROTARY VANE PUMP, **filed** Nov. 6, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4363, *Sargent-Welch Scientific Company* v. *J/B Industries, Inc.*

3,802,755. (See 3,478,402.)

3,811,485. (See 3,699,815.)

3,822,390, Grund, Courtin, Traub and Zeeb, CIRCUITRY FOR DETECTING MAXIMUM VALUES OF A SIGNAL SEQUENCE, **filed** June 6, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c2240, *Hewlett-Packard GmbH* v. *Corometrics Medical Systems, Inc.* Defendant's counterclaim is dismissed with prejudice, Oct. 19, 1978.

3,837,426. (See 3,506,089.)

3,864,228, L. F. Rossetti, Jr., MOLDABLE AND HEAT RECOVERABLE COMPOSITION COMPRISING AN ADMIXTURE OF VINYLIDENE OF FLUORIDE/HEXAFLUOROPROPYLENE COPOLYMER AND A POLYMER OF VINYLIDENE FLUORIDE, **filed** Nov. 21, 1978, D.C. Mass. (Boston), Doc. 78-3056-G, *Electronized Chemicals Corporation* v. *Raychem Corporation.*

3,864,686, W. G. Owen, ROOF MOUNTED VEHICLE ANTENNA, **filed** Nov. 22, 1978, D.C., M.D. Tenn. (Nashville), Doc. 78-2079-NE-CV, *William G. Owen* v. *Edward R. Milliken, Sr., et al.*

3,866,001. (See 3,506,089.)

3,897,879, L. Bubik, VEHICLE TOWING APPARATUS, **filed** Feb. 22, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-0392, *Vulcan Equipment Company Ltd.* v. *John Baugh, doing business as House of Wreckers.* Dismissed without prejudice, Oct. 20, 1978.

3,905,162, Lawrence and Santoro, METHOD OF PREPARING HIGH YIELD SEMICONDUCTOR WAFER, **filed** Oct. 23, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78-2460 WHO, *Silicon Materials, Inc.* v. *Siltec Corporation.*

3,906,658, S. Gross, MAGNETIC TOY HAVING SCULPTURABLE PARTICLES, **filed** Nov. 21, 1978, N.C., N.D. Tex. (Dallas), Doc. CA3-78-1416 D, *Barrons Creative Products, Inc.* v. *Sam Gross and CRDL, Inc.*

3,928,933, T. Iwanoto, HOLDING TOY, **filed** May 24, 1978, D.C., C.D. Calif. (Los Angeles), Doc. CV78-3026-HP, *ITI Hawaii and Takeji Iwanoto* v. *Sun Jin Trading Co., Ltd.* **Same, filed** Nov. 15, 1978, D.C., C.D. Calif. (Los Angeles), Doc. 78-4365, *ITI Hawaii, Inc.* v. *International Chemical Corp. et al.*

4,027,315, H. H. Barney, MULTIPLE IMAGE CAMERA, **filed** Nov. 16, 1978, D.C., N.D. Calif. (San Francisco), Doc. C-78-2670-CBR, *Dunn Instruments, Inc.* v. *Ohio Nuclear, Inc.*

4,084,589, R. W. Schmidt, VOLTAGE TO AIR PRESSURE TRANSDUCER, **filed** Nov. 14, 1978, D.C., S.D. Ohio. (Cincinnati), Doc. C-1-78-726, *Valco Cincinnati, Inc.* v. *Copar Corporation.* **Same, filed** Nov. 17, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4589, *Copar Corp.* v. *Valco Cincinnati, Inc.*

4,086,118, F. Dewey, RIGID COMPOSITE ARTICLES AND A METHOD FOR THEIR MANUFACTURE, **filed** Oct. 17, 1978, D.C., W.D. Mich. (Grand Rapids), Doc. K78-701-CAB, *Frank Dewey* v. *Thermocast International, Inc. and Kindt-Collins, Inc.*

4,095,623, Lemburg and Stolley, APPARATUS FOR SEVERING AND DEFORMING THE ENDS OF HELICAL BINDERS FOR PADS OR THE LIKE, **filed** Nov. 20, 1978, D.C. Conn. (Hartford), Doc. H78-624, *E. Ch Will (GmbH & Co.)* v. *Bielomatik Leuze & Co. and Matik North America.*

4,105,818, W. R. Scholle, GAS BARRIER PACKAGING MATERIAL, **filed** Nov. 15, 1978, D.C., N.D. Ill. (Chicago), Doc. 78c4544, *Scholle Corporation* v. *Liqui-Box Corporation.*

Re. 29,321. (See 3,699,815.)

D. 246,874, L. B. Schwartz, HANDBAG, **filed** Apr. 3, 1978, D.C. Conn. (Bridgeport), Doc. B-78-132, *Acricite Co., Inc.* v. *Bradless, Inc.* **Same, filed** June 23, 1978, D.C. Conn. (Bridgeport), Doc. B-78-241, *Acricite Company, Inc.* v. *International Playtex, Inc.* **Same, filed** Mar. 15, 1978, D.C., S.D.N.Y., Doc. 78-C-1144 LPG, *Acricite Company Inc.* v. *American Umbrella, Inc.* **Same, filed** Apr. 5, 1978, D.C., S.D.N.Y., Doc. 78-C-1527 VLB, *Acricite Co., Inc.* v. *Forsum, Inc.* That this final judgment on consent shall not be cited by any party hereto as an adjudication of contested issues, nor used for advertising, 6-12-78. **Same, filed** Apr. 25, 1978, D.C. Conn. (Bridgeport), Doc. B-78-164, *Acricite Co., Inc.* v. *Barkers Corp.* Action withdrawn as to all parties by plaintiff, 6-23-78. **Same, filed** Apr. 25, 1978, D.C. Conn. (Bridgeport), Doc. B-78-163, *Acricite Co., Inc.*, v. *Kinney Shoes Corp.* Action withdrawn by plaintiff as to all parties, 6-23-78. **Same, filed** June 21, 1978, D.C., E.D.N.Y. (Brooklyn), Doc. 78-C-1295, *Beacon Photo Service, Inc.* v. *Acricite Co., Inc.* **Same, filed** Mar. 15, 1978, D.C., S.D.N.Y., Doc. 78-C-1147(MP), *Acricite Co.* v. *Stupell Industries, Ltd., Inc.* That this final judgment on consent shall not be cited by any party hereto as an adjudication or contested issues, nor used for advertising, 7-5-78. **Same, filed** Apr. 27, 1978, D.C. Conn. (Bridgeport), Doc. B-78-166, *Acricite Co., Inc.* v. *Caldor, Inc.* Action withdrawn by plaintiff as to all parties, 6-6-78.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,741,386, Re. S.N. 945,321, Filed Sep. 25, 1978, Cl. 206/455, X-RAY FILM PACKAGE, Gunter Schmidt, Owner of Record: *E. I. Du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: Charles A. Weigel, Jr., Ex. Gp.: 241

3,918,873, Re. S.N. 960,299, Filed Nov. 13, 1978, Cl. 425/345, TABLETTING MACHINES, Jack Crossley, et al., Owner of Record: *Manesty Machines Limited, Liverpool, England,* Attorney or Agent: Robert D. Flynn, et al., Ex. Gp.: 147

3,974,426, Re. S.N. 932,758, Filed Aug. 10, 1978, Cl. 361/211, IN-LINE ENERGIZATION AND DE-ENERGIZATION OF AN EXTERNAL LOAD IN SERIES WITH AN EXTERNAL SOURCE OF ELECTRICITY IN RESPONSE TO EXTERNALLY SENSED PARAMETERS, Richard P. Gingras, Owner of Record: *Inventor,* Attorney or Agent: Robert H. Ware, et al., Ex. Gp.: 212

3,999,559, Re. S.N. 961,331, Filed Nov. 16, 1978, Cl. 131/61 A, MANUFACTURE OF FILTER-TIPPED CIGARETTES, Clifford Russell Marritt, Owner of Record: *Molins Limited, London, England,* Attorney or Agent: John C. Smith, Jr., et al., Ex. Gp.: 131

4,024,561, Re. S.N. 945,561, Filed Sep. 25, 1978, Cl. 70/175, LOCKING HOOD ASSEMBLY FOR FLOW CONTROL DEVICE, Bernard A. Di Giovanni, Owner of Record: *Inventor,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 351

PATENT NOTICES

Certificates of Correction for the Week of Jan. 16, 1979

P.P. 4,198	4,096,232	4,102,402	4,116,813
P.P. 4,200	4,096,269	4,102,797	4,116,823
Re. 29,575	4,096,333	4,102,803	4,116,996
3,796,131	4,096,343	4,102,829	4,117,146
3,802,951	4,096,401	4,102,863	4,117,254
3,843,463	4,096,413	4,102,964	4,117,309
3,891,632	4,096,415	4,103,021	4,117,576
3,953,286	4,096,729	4,103,048	4,117,596
4,001,311	4,097,264	4,103,095	4,118,228
4,008,267	4,097,308	4,103,153	4,118,289
4,012,787	4,097,412	4,103,281	4,118,326
4,019,107	4,097,529	4,103,622	4,118,461
4,041,152	4,097,687	4,103,819	4,118,575
4,044,125	4,097,698	4,104,147	4,118,746
4,048,906	4,097,847	4,104,255	4,118,786
4,050,154	4,097,950	4,104,387	4,118,834
4,050,960	4,098,039	4,104,467	4,118,971
4,052,953	4,098,214	4,105,235	4,119,094
4,053,601	4,098,258	4,105,466	4,119,099
4,057,761	4,098,353	4,105,699	4,119,211
4,064,039	4,098,587	4,106,066	4,119,290
4,071,002	4,098,707	4,107,146	4,119,357
4,073,198	4,098,766	4,110,374	4,119,399
4,075,134	4,098,943	4,112,562	4,119,468
4,078,139	4,099,026	4,112,586	4,119,472
4,080,449	4,099,031	4,112,661	4,119,631
4,081,070	4,099,135	4,112,696	4,119,703
4,081,550	4,099,160	4,112,870	4,119,740
4,081,710	4,099,165	4,113,117	4,119,761
4,082,720	4,099,199	4,113,224	4,120,112
4,086,117	4,099,285	4,113,296	4,120,407
4,088,118	4,099,346	4,113,452	4,120,961
4,088,652	4,099,431	4,113,470	4,120,996
4,088,717	4,099,622	4,113,617	4,121,005
4,091,738	4,099,846	4,113,655	4,121,034
4,092,475	4,099,865	4,113,750	4,121,649
4,092,729	4,100,065	4,113,997	4,121,852
4,094,007	4,100,101	4,114,393	4,121,895
4,094,706	4,100,268	4,114,496	4,121,945
4,094,891	4,100,286	4,114,826	4,121,952
4,095,131	4,100,623	4,114,971	4,121,982
4,095,330	4,100,852	4,115,075	4,122,053
4,095,398	4,101,095	4,115,135	4,122,097
4,095,472	4,101,310	4,115,465	4,122,204
4,095,583	4,101,465	4,115,779	4,122,315
4,095,611	4,101,677	4,115,871	4,122,453
4,095,642	4,101,688	4,115,891	4,122,483
4,095,685	4,101,777	4,116,002	4,123,862
4,095,703	4,101,950	4,116,386	4,125,165
4,095,721	4,102,069	4,116,672	
4,096,122	4,102,214	4,116,698	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

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Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20546.

Patent application 802,398. Method for Dissolving Plutonium Oxide. Filed June 1, 1977.

Patent application 807,081. Tandem Mirror Plasma Confinement Apparatus. Filed June 16, 1977.

Patent application 807,082. Charge Exchange Cooling in the Tandem Mirror Plasma Confinement Apparatus. Filed June 16, 1977.

Patent application 812,936. Method and Means of Directing an Ion Beam Onto an Insulating Surface for Ion Implantation or Sputtering. Filed July 1, 1977.

Patent application 816,575. Gas-Absorption Process. Filed July 18, 1977.

Patent application 827,658. Method for Conducting Electroless Metal-Plating Processes. Filed Aug. 25, 1977.

Patent 4,002,916. Apparatus for Measuring a Flux of Neutrons. Filed June 26, 1975. Patented Jan. 11, 1977. Not available NTIS.

Patent 4,056,000. Altitude Release Mechanism. Filed Mar. 16. 1977. Patented Nov. 1, 1977. Not available NTIS.

Patent 4,057,074. Bidirectional Piston Valve. Filed Aug. 24, 1976. Patened Nov. 8, 1977. Not available NTIS.

Patent 4,059,759. Passive and Active Pulse Stacking Scheme for Pulse Shaping. Filed May 25, 1976. Patented Nov. 22, 1977. Not available NTIS.

Patent 4,063,089. X-Ray Chemical Analyzer for Field Applications. Filed Nov. 24, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,065,350. Vertically Stabilized Elongated Cross Section Tokamak. Filed July 9, 1974. Patented Dec. 27, 1977. Not available NTIS.

Patent 4,067,316. Solar Energy Collector. Filed Oct. 22, 1976. Patented Jan. 10, 1978. Not available NTIS.

Patent 4,067,756. High Strength High Ductility Low Carbon Steel. Filed Nov. 2, 1976. Patented Jan. 10, 1978. Not available NTIS.

Patent 4,068,015. Process to Minimize Cracking of Pyrolytic Carbon Coatings. Filed Nov. 4, 1976. Patented Jan. 10, 1978. Not available NTIS.

Patent 4,069,293. Method for Dissolving Plutonium Dioxide. Filed Feb. 20, 1976. Patented Jan. 17, 1978. Not available NTIS.

Patent 4,070,241. Nuclear Reactor Removable Radial Shielding Assembly Having a Self-Bowing Feature. Filed Feb. 16, 1977. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,070,438. Method for Loading Resin Beds. Filed Sept. 21, 1976. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,070,514. Method of Fabricating Graphite for Use as a Skeletal Prosthesis and Product Thereof. Filed June 5, 1973. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,071,151. Vibratory High Pressure Coal Feeder Having a Helical Ramp. Filed Nov. 24, 1976. Patented Jan. 31, 1978. Not available NTIS.

Patent 4,071,743. Digital Scale Converter. Filed Feb. 7, 1977. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,072,183. Heat Exchanger With Intermediate Evaporating and Condensing Fluid. Filed Nov. 29, 1976. Patented Feb. 7, 1978. Not available NTIS.

Patent 4,073,647. Preparation of Cermets. Filed Apr. 26, 1976. Patented Feb. 14, 1978. Not available NTIS.

Patent 4,076,584. Rodded Shutdown System for a Nuclear Reactor. Filed Jan. 28, 1976. Patented Feb. 28, 1978. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health
Chief, Patent Branch, Westwood Building,
Bethesda, Md. 20014

Patent application 906,868. Device for High Efficiency Continuous Countercurrent Extraction Using a Rotating Helical Tube. Filed May 17, 1978.

Patent 4,081,216. Ultrasonic Transducer Calibration. Filed June 25, 1976. Patented Mar. 28, 1978. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant. General Counsel for Patent Matters
NASA Code GP–2
Washington, D.C. 20546

Patent application 928,131. A Seat Cushion to Provide Realistic Acceleration Cues for Aircraft Simulator Pilots. Filed July 26, 1978.

INTELLECTUAL PROPERTY DIVISION, OTJAG
Department of the Army, Room 2D 444, Pentagon
Washington, D.C. 20314.

Patent application 880,734. Automatic Astroposition Determination Apparatus. Filed Feb. 24, 1978.

Patent 4,053,712. Adaptive Digital Coder and Decoder. Filed Aug. 24, 1976. Patented Oct. 11, 1977. Not available NTIS.

Patent 4,055,079. Cylinder Firing Indicator. Filed Aug. 9, 1976. Patented Oct. 25, 1977. Not available NTIS.

Patent 4,056,852. Adjustable Helmet Suspension System. Filed Apr. 19, 1976. Patented Nov. 8, 1977. Not available NTIS.

Patent 4,058,438. Rapid Universal Sensing Cell. Filed Oct. 28, 1976. Patented Nov. 15, 1977. Not available NTIS.

Patent 4,059,052. Fuze Modulation System. Filed Feb. 21, 1957. Patented Nov. 22, 1977. Not available NTIS.

Patent 4,062,126. Deadband Error Reduction in Target Sight Stabilization. Filed Nov. 8, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,062,598. Wedge Block Lock for Vehicle Track End Connectors. Filed Aug. 9, 1976. Patented Dec. 13, 1977. Not available NTIS.

Patent 4,069, 990. Ring-Wing Canard Spin-Up Control Mechanism. Filed Mar. 14, 1977. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,070,692. Video Digitizing System for Single Valued Functions. Filed May 8, 1975. Patented Jan. 24, 1978. Not available NTIS.

Patent 4,079,955. Locking Device. Filed Aug. 9, 1974. Patented Mar. 21, 1978. Not available NTIS.

Patent 4,080,942. Metering Fuel by Compressibility. Filed June 23, 1976. Patented Mar. 28, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
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New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
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Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 18, 1978

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	12-19-77
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	12-16-77
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	5-1-78
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	9 ~~29-77~~
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	10-19-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	5-16-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-17-77
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-22-77
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-1-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	2-17-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-3-77
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus: Plastics Working Apparatus; Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-16-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-11-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	10-6-77
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors: Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-2-77

Expiration of patents: The patents within the range of numbers indicated below expire during November 1978, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,007,160 to 3,001,168, inclusive
Plant Patents..... Numbers 2,101 to 2,107, inclusive

REISSUES

JANUARY 16, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

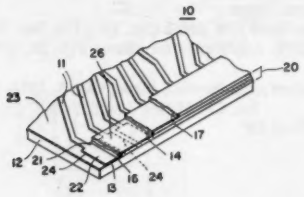
Re. 29,879
METHOD OF FORMING A LAMINATE

Benjamin H. Cranston, Hamilton Township, Mercer County, N.J.; Carl F. Hornig, Kingston, N.H., and Donald A. Machusak, Hopewell Township, Mercer County, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Original No. 3,998,374, dated Dec. 21, 1976, Ser. No. 596,028, Jul. 11, 1975. Application for reissue Sep. 30, 1977, Ser. No. 838,442

Int. Cl.[2] **H05K** *3/24;* **B23K** *28/00*

U.S. Cl. 228—107 **8 Claims**



1. A method of forming a laminate, which comprises:

a. placing a metal film in juxtaposition to a first surface to be joined thereto;

b. positioning a *planar* buffer medium proximate said film, said buffer medium having an explosive charge on at least one surface thereof; and

c. detonating said explosive charge to propel said film against an edge of said first surface to shear at least a portion of said film from the remainder thereof, corresponding in shape to said first surface, to bond said sheared portion to said first surface.

Re. 29,880
APPARATUS FOR USE IN INVESTIGATING SPECIMENS

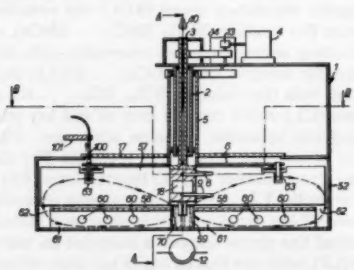
Ian D. Duff, Ossining, N.Y., assignor to The Secretary of State for Social Services in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Original No. 4,054,416, dated Oct. 18, 1977, Ser. No. 714,677, Aug. 11, 1976. Application for reissue Feb. 27, 1978, Ser. No. 881,842

Claims priority, application United Kingdom, Aug. 20, 1975, 34676/75; Jun. 11, 1975, 25118/75

Int. Cl.[2] **F27D** *11/00;* **B01L** *7/02, 9/06;* **G01N** *1/10*

U.S. Cl. 422—64 **6 Claims**



1. Apparatus for use in investigating liquid specimens comprising a substantially horizontal turntable having a central rotational axis and being adapted to support a plurality of vessels for liquid specimens in a circular array centered on the said rotational axis such that the vessels extend below the underside thereof; means for stepwise rotation of the turntable for specimen investigation during dwell periods; an enclosure disposed beneath the turntable to define a space bounded laterally and at the bottom of said enclosure and upwardly by the turntable and into which the vessels extend when positioned in the turntable; temperature changing means for changing the temperature of air in said space; air circulating means disposed in said space and arranged to circulate air between the temperature changing means and the vessels wholly within said space; a control device for the air temperature changing means arranged to maintain the temperature of the vessels substantially at a predetermined value; and a liquid dispenser mounted adjacent the turntable for dispensing liquid specimens into different vessels in the turntable during respective dwell periods thereof, the dispenser comprising a tubular body of a high thermal conductivity having an inlet through which liquid may enter said tubular body, and an outlet which comprises a dispensing tip of high thermal conductivity through which liquid may leave the tubular body, said tubular body also including a cavity adjacent said outlet, the dispenser being provided with means for charging the tubular body with liquid by way of said inlet and for dispensing predetermined quantities of such liquid, said tubular body including an electric heating coil, wound around substantially its length and a thermistor positioned in said cavity to control said heating coil to maintain the temperature of the liquid being dispensed substantially at a predetermined value.

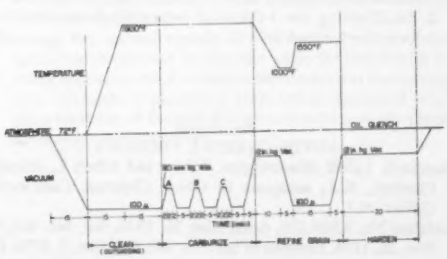
Re. 29,881
METHOD OF VACUUM CARBURIZING

Herbert W. Westeren, Barrington; Vincent Scotto, Warwick; Ernest C. Gronquist, Jr., Providence, all of R.I., and Donald A. Taft, Orange, Calif., assignors to C. I. Hayes Inc., Cranston, R.I.

Original No. 3,796,615, dated Mar. 12, 1974, Ser. No. 155,950, Jun. 23, 1971. Application for reissue Mar. 26, 1975, Ser. No. 562,197

Int. Cl.[2] **C23C** *11/10*

U.S. Cl. 148—16.5 **5 Claims**



5. A method of carburizing a metallic article in a subatmospheric environment to produce a preselected amount of surface absorbed carbon and diffused gradient of carbon in said article, comprising the steps of heating the article in a heating chamber in a subatmospheric environment, wherein adsorbed gases and other impurities are removed from said article and the surfaces thereof are cleaned, periodically introducing a source of carbon into said chamber and thereafter evacuating said chamber to generate one or more pulses of the carbon source in said chamber so as to

remove unwanted waste reactants produced by the source of carbon and to promote effective circulation of carbon vapor around said article, each of said pulses including backfilling said chamber with a carburizing gas to a pressure that is maintained at subatmospheric conditions, the carburizing gas defining the source of carbon and forming active carbon vapor and waste reactants in said chamber after being admitted therein, each pulse including the removal of the waste reactants from the chamber during the period of carbon absorption into said article and following each backfilling operation of admitting the carburizing gas into said chamber, controlling the amount of carburizing gas admitted into said heating chamber in each backfilling operation in proportion to the partial pressure of the carbon vapor in said chamber, so that effective absorption and diffusion of carbon into said article is obtained at a controlled rate to produce a uniform case of preselected carbon potential in said article.

Re. 29,882

SYNTHESIS OF OXINDOLES FROM ANILINES AND INTERMEDIATES THEREIN

Paul G. Gassman, St. Paul, Minn., assignor to Ohio State University Research Foundation, Columbus, Ohio

Original No. 3,897,451, dated Jul. 29, 1975, Ser. No. 355,207, Apr. 27, 1973. Application for reissue May 2, 1977, Ser. No. 793,188

Int. Cl.[2] C07D *209/34*

U.S. Cl. 260—325 R **5 Claims**

1. A process for preparing 2-oxindoles which comprises

a. reacting an N-haloaniline with a β-thio compound selected from the group consisting of a lower-alkyl β-thioalkanoate ester and a lower-alkyl β-thioalkanoyl acylamide in organic liquid diluent under substantially anhydrous conditions at a temperature of from about −78° C to about 10° C to form an azasulfonium salt;

b. reacting the azasulfonium salt from step (a) with a substantially anhydrous base which will cause formation of an ylid intermediate to form an [ortho-[(thioalkyl) (alkylthiocarbonyl)methyl]-aniline,] *ortho-[1-(thioalkyl) (lower-alkyloxycarbonyl)-methyl]-aniline, when the β-thio compound of step (a) is a lower-alkyl β-thioalkanoate ester, and an ortho [1-(thioalkyl) (lower-alkylaminocarbonyl) methyl]-aniline when the β-thio compound of step (a) is a lower-alkyl β-thioalkanoyl acylamide,*

c. heating the ortho-substituted aniline from step (b) to from about 50° C to about 150° C or acidifying the substituted aniline from step (b) to form a 3-thioalkyl-2-oxindole, and

d. desulfurizing the 3-thioalkyl-2-oxindole from step (c) to form the 2-oxindole.

Re. 29,883

ANTIBACTERIAL PRODUCT

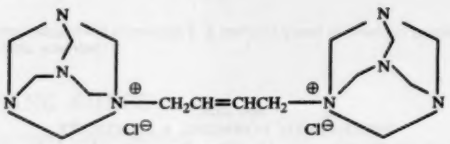
Jerome S. Luloff, Bloomington, Minn., and Albert L. Eilender, Flanders, N.J., assignors to Cosan Chemical Corporation, Clifton, N.J.

Original No. 3,959,276, dated May 25, 1976, Ser. No. 527,364, Nov. 26, 1974. Division of Ser. No. 403,819, Oct. 5, 1973, Pat. No. 3,928,607. Application for reissue May 25, 1977, Ser. No. 800,480

Int. Cl.[2] C07D *251/04*

U.S. Cl. 544—186 **1 Claim**

1. A method for preparing the two-to-one quaternary ammonium adduct of hexamethylenetetramine and 3,4-dichlorobutene-1 which comprises reacting 3,4-dichlorobutene-1 with hexamethylenetetramine at a temperature of less than about 130° C. in an inert organic solvent in which the adduct is substantially insoluble, *said adduct having antibacterial activity and having the structural formula:*



Re. 29,884

KEY TELEPHONE SYSTEM FOR SUBSCRIBERS

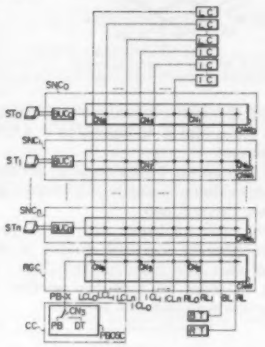
Shigeharu Komine; Yoshiaki Tanaka, and Shiro Kuzuya, all of Tokyo, Japan, assignors to Oki Electric Industry Company, Ltd., Tokyo, Japan

Original No. 3,985,959, dated Oct. 12, 1976, Ser. No. 618,122, Sep. 30, 1975. Application for reissue Feb. 28, 1978, Ser. No. 882,104

Claims priority, application Japan, Oct. 5, 1974, 49-114305

Int. Cl.[2] H04M *11/06, 1/00*

U.S. Cl. 179—2 DP **2 Claims**



1. A key telephone system for subscribers comprising: a *plurality of* key telephone [station] *stations* (ST) *each* having indication lamps (for example, LP, PLP, OPBL) which indicate the status of [the] *each* key telephone station, and a plurality of function buttons (for example, OPB, PB, HLD, INTR, INTO): a subscriber common equipment (CE) which is comprised of a plurality of connecting network circuits (for example, CNW_0, CNW_1 . . . CNWn), line circuits (LC), intra-office circuits (IC) and a common controller (CC) which controls said connecting network [cicuits,] *circuits,* line circuits and intra-office circuits, where said connecting network circuits connect a speech line (SL) of one key telephone station and a speech line (SL) of the other key telephone station by using a register connecting circuit (RGC) and switching network circuits (for example, SNC_0, SNC_1 . . . SNCn), each of which switching network circuits cooperates with both line circuit links (for example, LCL_0, LCL_1 . . . LCLn) and intra-office circuit links (for example, ICL_0, ICL_1 . . . ICLn); and control lines (CL) which connect each of said key telephone stations and said subscriber common equipment, wherein a desired one of said line circuit links is caught [by dialing a desired line circuit number by push button means (PB) of said common controller] *by means of said common controller when dialing a desired line circuit number by using push buttons (PB),* which desired line circuit number is indicated on said indication lamp (LP), while the desired one of said intra-office circuit links is caught by pushing a desired intra-office button (for example, INTR. INTRO), by means of said common controller.

Re. 29,885

HORIZONTAL DEFLECTION SYSTEM WITH BOOSTED B PLUS

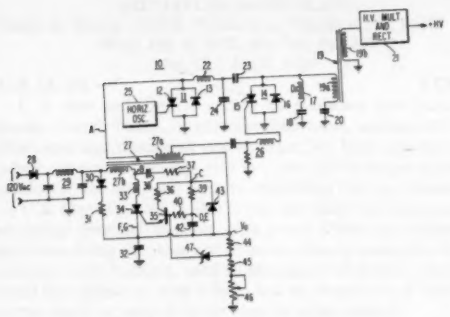
Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Original No. 3,832,595, dated Aug. 27, 1974, Ser. No. 344,296, Mar. 23, 1973. Application for reissue Aug. 25, 1976, Ser. No. 717,706

Claims priority, application United Kingdom, Apr. 5, 1972, 15576/72

Int. Cl.[2] H01J *29/70*

U.S. Cl. 315—408 29 Claims



1. In a deflection system for supplying energy to a deflection winding during a portion of each deflection interval, a voltage boost circuit comprising:

a source of direct current voltage subject to undesirable voltage variations;

switching means in said deflection system operable from a first to a second state during each deflection interval *for developing a second source of deflection rate alternating current voltage within said deflection system;*

inductance means coupled to said source of direct current voltage and to said [switching means for supplying operating current to said deflection system during a portion of each deflection interval] *second source of deflection rate alternating current voltage for combining said second source of alternating current voltage with said source of direct current voltage*; and

[rectifying means including] active current conducting *rectifying* means coupled to said inductance means, [across which inductance means is developed an alternating current voltage in response to said switching means operating from said first to said second state, and to said source of direct current voltage] for rectifying said alternating current voltage and adding it to the voltage produced by said source of direct voltage.

Re. 29,886

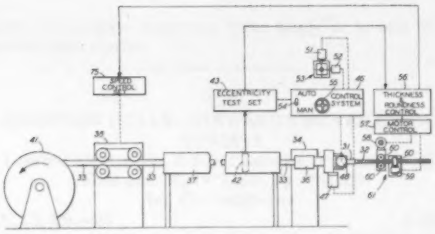
METHODS OF AND APPARATUS FOR CONTROLLING THE THICKNESS OF AN ANNULAR EXTRUSION

Matthew R. Dembiak, Clifton, N.J., and John J. Glosek, Columbia, S.C., assignors to Western Electric Company, Inc., New York, N.Y.

Original No. 3,914,356, dated Oct. 21, 1975, Ser. No. 455,775, Mar. 28, 1974. Application for reissue Oct. 17, 1977, Ser. No. 843,088

Int. Cl.[2] G06F *15/46;* B29C *3/06*

U.S. Cl. 364—469 15 Claims



6. A method of controlling the wall thickness of an annular extruded article, including controlling the uniformity of the wall thickness of the article by a first mechanism, and controlling the average wall thickness of the article by a second mechanism, the method comprising:

generating first control signals in response to a disparity between *the average value of the wall thickness in diametrically opposite quadrants of the article and the average value of the* wall thickness in *the* adjacent *two* quadrants of the article, the disparity exceeding a predetermined tolerance range;

generating second control signals of a first type in response to an increase of the average wall thickness of the article above a predetermined thickness range and of a second type in response to a decrease of the average wall thickness below the thickness range;

applying the first control signals to the first mechanism to render the first mechanism effective to reduce the disparity between *the average value of the thickness in diametrically opposite quadrants and the average value of* the wall thickness in adjacent quadrants and thereby increase the uniformity of the article;

applying the second signals to the second mechanism to render the second mechanism effective to change the average wall thickness to a value within the predetermined thickness range; and

blocking the second signals of the first type from being applied to the second mechanism while the first signals are being applied to the first mechanism, whereby the average wall thickness is prevented from being decreased while the uniformity of the wall thickness is outside of the predetermined tolerance range.

PLANT PATENTS

GRANTED JANUARY 16, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,365

MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 3, 1978, Ser. No. 866,807
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are coral to orange pink in color, (often deeper colored outdoors), the buds and flowers resembling Starina (miniature — U.S. Plant Pat. No. 2,646) in size and shape but more coral or orange (less red) in color, with petals of heavier substance; said plant being vigorous and compact, easy to propagate from cuttings or by budding, with an abundance of disease resistant small semi-glossy or matt foliage and an abundance of flowers borne singly or several to the stem in loose clusters.

4,366

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 3, 1978, Ser. No. 866,767
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—7 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy, dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are soft yellow blended with pink, resembling in color the seed parent, Little Darling (Floribunda — U.S. Plant Pat. No. 1,581, expired), and resembling the miniature rose Sheri Anne (U.S. Plant Pat. No. 2,836) in size and shape of bud and flower; and further characterized by a plant which is vigorous and compact, easy to propagate from cuttings or by budding, with an abundance of disease resistant small semi-glossy or matt foliage and an abundance of flowers having a distinct peach or nectarine fragrance, borne singly or several to the stem in loose clusters.

4,367

AMERICAN HOLLY—STEWARD'S SILVER CROWN VARIETY

T. Linwood Steward, Jr., R.F.D. Lambs Rd., Pitman, N.J. 08071

Filed Jan. 31, 1977, Ser. No. 764,529
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—65 **1 Claim**

1. A new and distinct variety of American Holly (*Ilex opaca*) resulting as a mutation on a portion of chance seedling growing in a cultivated area exhibiting (a) variegated newly formed leaves having an upper side which possesses an off-white border with a pinkish cast and a two-toned mottled dark and light green center portion, and (b) the propensity to abundantly form red berries, substantially as shown and described.

4,368

ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Sep. 2, 1977, Ser. No. 830,355
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—10 **1 Claim**

1. A new and distinct variety of miniature rose plant of hardy; dwarf, bushy, much branched habit, substantially as illustrated and described, characterized by buds and flowers which are deep red, the color resembling Little Curt (miniature — not patented) and the miniature rose, Starina (U.S. Plant Pat. No. 2,646) in general form and size; and further characterized by a plant which is vigorous and compact with abundant medium to small size, semi-glossy, disease resistant foliage, easy to propagate from cuttings and by budding, with an abundance of flowers borne singly or several to the stem in moderately loose clusters.

PATENTS

GRANTED JAN. 16, 1979

ERRATA

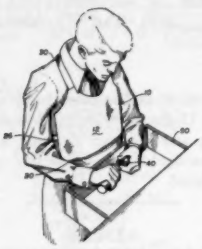
For CLASS	See PATENT NO.
405–043	4,134,268
405–037	4,134,269
405–302	4,134,270
093–061 R	4,134,322
111–095	4,134,349
124–035 A	4,134,369
403–104	4,134,703
422–009	4,134,727
422–009	4,134,728
422–009	4,134,729
195–127	4,134,731
422–198	4,134,732
422–177	4,134,733
422–224	4,134,734
422–188	4,134,735
159–003	4,134,736
264–025	4,134,812
521–032	4,134,861
560–024	4,134,880
528–299	4,134,881
528–309	4,134,882
528–063	4,134,883
206–303	4,134,892
562–519	4,134,912
568–664	4,134,924
568–637	4,134,925
260–501.11	4,134,994
260–884	4,134,995
219–069 M	4,135,070
340–758	4,135,117
333–070 R	4,135,132
333–073 W	4,135,133
335–020	4,135,134
335–046	4,135,135
335–112	4,135,136
335–206	4,135,137
335–272	4,135,138
340–001 R	4,135,139
340–001 R	4,135,140
340–007 PC	4,135,141
340–008 R	4,135,142
340–046	4,135,145
340–384 E	4,135,146
340–146.3 E	4,135,147
340–146.3 H	4,135,148
340–147 R	4,135,149
340–167 R	4,135,150
366–060	4,135,171
358–141	4,135,182

PATENTS

GRANTED JANUARY 16, 1979

GENERAL AND MECHANICAL

4,134,152
APRON AND METHOD FOR PRECIOUS METAL RECOVERY
Gerald R. Pierre, 16623 Kettleriver Blvd., Forest Lake, Minn. 55025, assignor to Gerald Roy Pierre, Forest Lake, Minn.
Filed May 20, 1977, Ser. No. 798,813
Int. Cl.[2] A41B *13/10*
U.S. Cl. 2—51 **4 Claims**

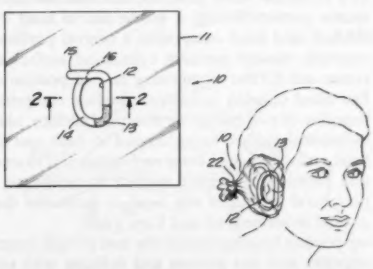


1. An apron for use by persons working with precious materials, particles of which are dispersed as work is performed, comprising:

a sheet of combustible material composed of fibers arranged such that the spaces between fibers trap solid particles in the size range from No. 16 to No. 400 on the Tyler Standard Sieve Series thrown against said material during the working of said precious materials, and the post-combustion residue of said material, including trapped particles, being suitable for use in a conventional refining process for recovering the precious material; and

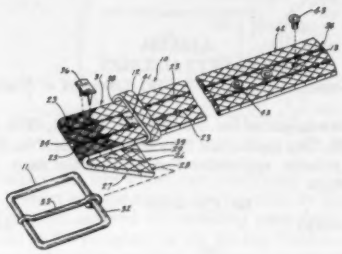
means for fastening said sheet of material to the upper body of said person whereby particles dispersed come into contact with said sheet of material and are trapped.

4,134,153
THROW-AWAY EAR PROTECTOR
Donna S. Voorhees, 2081 Garfias Dr., Pasadena, Calif. 91104
Filed Jul. 18, 1975, Ser. No. 597,203
Int. Cl.[2] A41D *21/00*
U.S. Cl. 2—174 **8 Claims**



1. A single-use throw-away ear protector comprising a single outstretched non-tubular plaque of supple impervious film having an opening generally centrally thereof, said opening being sized to receive the base of the human ear and encircled by a band of pressure sensitive adhesive masked until applied to the ear by a protective cover, and the perimeter portions of said plaque being snugly gatherable about the ear and securable tightly together thereby to provide a waterproof enclosure for the ear to exclude moisture from entering said enclosure and the ear so long as assembled about the ear with said pressure sensitive adhesive pressed against the skull about the ear base.

4,134,154
BELT MEMBER AND METHOD OF CONSTRUCTING SAME
Marty Faulkner, P.O. Box 69, Fostoria, Iowa 51340
Filed Jul. 18, 1977, Ser. No. 816,650
Int. Cl.[2] A41F *3/02*
U.S. Cl. 2—338 **8 Claims**



1. A method for constructing a garment belt from a plurality of sections of a tubular shaped braided heat fusible material, comprising:

(a) flattening each tubular section to form an elongated double thickness flat strip having an upper layer and a lower layer joined together along the side edges thereof,

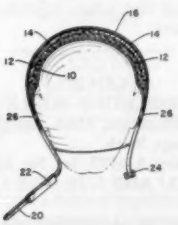
(b) arranging a plurality of the strips in a side by side relation with the sides of adjacent strips in abutting engagement,

(c) fastening together the adjacent sides of adjacent strips to form a single flat garment belt,

(d) forming a hole through said garment belt, and

(e) heat fusing the edges of the hole to prevent the braided material from unraveling.

4,134,155
SWIMMER PROTECTIVE HELMET
Douglas G. Robertson, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed Sep. 22, 1975, Ser. No. 615,264
Int. Cl.[2] A42B *3/02*
U.S. Cl. 2—412 **20 Claims**



1. A protective helmet for a swimmer's head comprising:

(a) a continuous inner, open cell foam liner which is pervious to both air and water, intimately in contact with said swimmer's head, providing a thermally protective layer for said swimmer's head;

(b) a closed cell foam impact cushioning layer having a concave and a convex surface, said concave surface being

adhesively connected to said foam liner, said convex surface having a plurality of indentations formed therein;

(c) a plurality of rigid impact deflecting plates positioned within said indentations of said cushioning layer and secured thereto to form a substantially smooth outer surface; and

(d) an outer overall covering layer positioned over said substantially smooth outer surface, said outer overall covering layer formed of a material which is resistant to high temperatures and fire;

(e) wherein said protective helmet is lightweight, flexible and has a low profile for unobscured vision and unrestrained mobility and has ear vents formed therein for unrestricted audition out of water and aural pressure equalization in water.

4,134,156

SAFETY HELMET

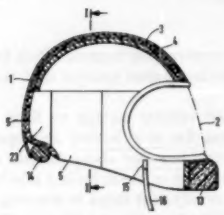
Kalman Györy, Ahrwaldstr. 7, 3141 Garlstorf a. Walde, Germany

Continuation-in-part of Ser. No. 695,115, Jun. 11, 1976, Pat. No. 4,038,700. This application May 31, 1977, Ser. No. 801,914

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659324

Int. Cl.[2] A42B *3/02*

U.S. Cl. 2—413 **16 Claims**



1. A safety helmet comprising an integral helmet, an inflatable, interconnected air-cushion system positioned in a lower part of the integral helmet and an elastic material lining positioned in said integral helment above said air cushion system, said integral helmet having a tapered portion extending in a downward direction below the chin of the wearer and encircling the same, and having a frontal opening for the face, wherein said air cushion system extends from the lower edge of said helmet to at least the level of the ears, but not higher than the level of the temples of a wearer of the safety helmet, said air cushion system including inflatable air cushions substantially free from cellular material having means for inflating and deflating the same, the air cushions, when inflated, contacting the head of the wearer and, when deflated, being spaced from the head of the wearer.

4,134,157

INSERTION TOOLS

George R. Laure, Kalamazoo, Mich., assignor to Laure Prosthetics, Inc., Portage, Mich.

Filed Aug. 3, 1977, Ser. No. 821,545

Int. Cl.[2] A61F *1/24*; A61B *17/00*

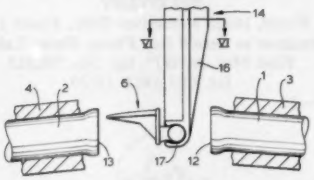
U.S. Cl. 3—1.91 **5 Claims**

1. In a tool for inserting a component of a prosthetic implant, said component having a body part with a prong projecting from one side thereof and a neck portion projecting from the other side thereof and a generally cylindrical head at the end of said neck portion, the combination comprising:

a handle with a tool head portion at one end thereof;

said tool head portion having a blind opening in one part thereof dimensioned for snug but slidable reception of the implant head on one side of said neck portion and said tool head portion having a generally U-shaped opening of which the bight portion is generally semicircular and comprising a substantial continuation of the immediately adjacent walls of said blind opening;

whereby when said implant component is in position within said tool, one portion of said implant head will be received snugly in the blind opening of said tool head portion and



another portion of said implant head will be against the bight of said U-shaped opening whereby a wall of the blind opening and the wall defining said bight may together be caused to bear against the opposed surface of said implant head.

4,134,158

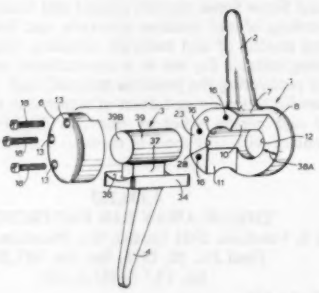
KNEE JOINT PROSTHESIS

George R. Laure, Kalamazoo, Mich., assignor to Laure Prosthetics, Inc., Portage, Mich.

Filed Aug. 22, 1977, Ser. No. 826,896

Int. Cl.[2] A61F *1/24*

U.S. Cl. 3—1.911 **5 Claims**



1. In a prosthetic knee joint, the combination comprising:

a recess portion having a prong and a head on an end thereof, said head comprising a central portion having a centrally located partially cylindrical surface defining a recess and further comprising an end portion defining a first blind opening including a surface comprising a continuation of said partially cylindrical surface, said partially cylindrical surface being limited at each end thereof by limit surfaces spaced from each other and extending from said partially cylindrical surface to points on the outer peripheral surface of said head to determine the limits of pivotal movement of said knee joint;

a cap portion bearing against the end of said central portion opposite said end portion and defining with said central portion a second blind opening concentric with and identical in mirror image with said first blind opening, said first blind opening, said partially cylindrical surface and said second blind opening all being coaxial with respect to each other on a central axis and the surface of contact between said cap portion and the adjacent end of said central portion being perpendicular to the said central axis;

removable means for fixing said cap portion rigidly to said central portion;

a cylinder part snugly but pivotally received within said

recess and having a neck extending generally radially outwardly therefrom between said limit surfaces;

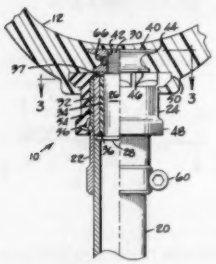
a platform at the end of said neck arranged generally perpendicular to the direction of such extent and a prong projecting beyond said platform in the direction comprising substantially a continuation of the direction of projection of said neck.

4,134,159

TORQUE ABSORBER FOR ARTIFICIAL LIMBS

Michael T. Wilson, 1259 Monument Blvd., Concord, Calif. 94520

Filed Jun. 9, 1977, Ser. No. 805,059
Int. Cl.[2] A61F *1/08*
U.S. Cl. 3—2 **11 Claims**



1. A torque absorber for a prosthesis having a socket, the torque absorber comprising:

a first hollow cylindrical means for interconnection with the skeletal portion of the prosthesis;

second means rotatably mounted in said first hollow cylindrical means;

resilient means bondingly associated about said first hollow cylindrical means;

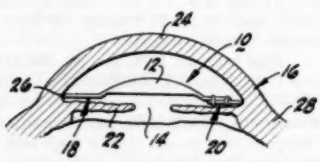
said second means and said resilient means bondingly moldable in said prosthesis socket so that said second means and said resilient means cooperate to allow limited rotation of said socket relative said first hollow cylindrical means.

4,134,160

INTRAOCULAR LENS

Jon H. Bayers, 3737-A Lonetree Way, Antioch, Calif. 94509

Filed Mar. 16, 1977, Ser. No. 778,123
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 **9 Claims**



1. An intraocular lens for an eye comprising:

a. lens portion adapted for positioning over the pupil;

b. first member adapted for extending away from said lens portion to the periphery of the iris and being fixed to said lens portion;

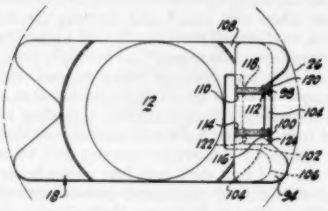
c. second adjustable member adapted for extending a selected distance away from said lens portion to the periphery of the iris and spaced along the periphery of the iris from said first member, said second adjustable member including a first projection connected to said lens portion; a second projection being adjacent said first projection; and means for positioning said first projection in relation to said second projection.

4,134,161

ADJUSTABLE INTRAOCULAR LENS

Jon H. Bayers, 1042 Panadero Ct., Clayton, Calif. 94517

Continuation-in-part of Ser. No. 778,123, Mar. 16, 1977. This application Apr. 6, 1978, Ser. No. 893,948
Int. Cl.[2] A61F *1/16, 1/24*
U.S. Cl. 3—13 **6 Claims**



1. An intraocular lens for an eye comprising:

a. lens portion adapted for positioning over the pupil;

b. first member adapted for extending away from said lens portion to the periphery of the iris and fixed to said lens;

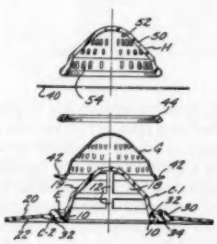
c. second adjustable member adapted for extending a selected distance away from said lens portion to the periphery of the iris and spaced along the periphery of the iris from said first member; said second adjustable member including a projecting element extending away from said lens portion and being fixed to said lens portion, a wedging piece having an edge portion adapted for extending to the periphery of the iris, and means for urging said wedging piece toward said projecting element.

4,134,162

DISPOSABLE DRAIN STRAINER

Stanley G. Sharland, 12322 Quartz Pl., CA, 92643; Angelo R. Mecca, 956 Senate St., Costa Mesa, Calif. 92627, and Robert R. Masson, Box 241, Yorba Linda, Calif. 92686

Filed Sep. 6, 1977, Ser. No. 831,079
Int. Cl.[2] E03C *1/26*
U.S. Cl. 4—292 **3 Claims**



1. In combination with a strainer capable of being removably mounted above a drain opening in the generally flat bottom of a sink, said strainer being of the type that includes a ring-shaped web that overlies the portion of said bottom adjacent said drain opening, a plurality of vacuum cups on said web that removably hold said web on said portion of said bottom, a generally conical first shell that extends upwardly, from an inner periphery of said ring-shaped web, and said shell having a plurality of circumferentially and vertically spaced first openings therein that prevent solid particles of greater size than said first openings moving therethrough to said drain opening, a device for further limiting the size of said solid

particles that can pass through said strainer to said drain opening and one that will not clog by hair and stringy material, said device including:

a. a punch and forming die formed from a rigid body having a cavity formed therein that conforms to the external surface of said first shell, and a number of circumferentially and vertically spaced teeth projecting inwardly from said cavity;

b. a generally conical second shell formed by pressing said punch and forming die downwardly onto a metal foil blank disposed over said first shell, said second shell matingly engaging said first shell in removable securement thereto during an operational phase of said strainer combination when said punch and forming die has been removed, said second shell also having a plurality of second openings formed therein by said inwardly projecting teeth on said die, said openings being aligned with said first openings but are of substantially smaller area, said second shell including a flange member extending radially outward from a lower surface of said second shell; and

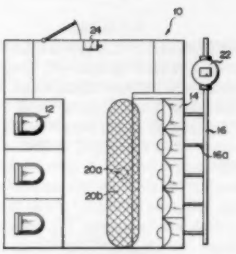
c. first means for removably securing said second shell in place on said first shell, said first means being located in removable contact with said conical second shell for providing varying flow area through said strainer, said first means for removably securing said second shell including a resilient retaining ring member insertable over said second shell for engagement with said second shell flange member.

4,134,163

AUTOMATIC FLUSHING SYSTEM

Masakazu Matsunaga, Asaka, Japan, assignor to F. M. Valve Manufacturing Co., Ltd., Asaka, Japan

Filed Sep. 19, 1977, Ser. No. 834,465
Claims priority, application Japan, Sep. 27, 1976, 51-115623
Int. Cl.[2] E03D *13/00*
U.S. Cl. 4—302 **9 Claims**



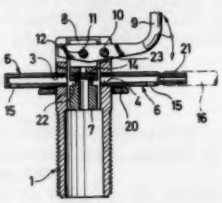
1. An automatic flushing system for flushing a plurality of toilet bowls installed in a lavatory at various intervals according to the frequency at which the toilet bowls are used, the system comprising a detecting device for delivering a detection signal upon detecting each person entering the lavatory; a solenoid-controlled valve for flushing the toilet bowls; a first command circuit for delivering a first output signal in response to a detection signal delivered first from said detecting device after the flushing of the toilet bowls; a first signal-transmitting circuit having a first timer which starts upon receipt of the first output signal and stops upon lapse of a first reference time, thereby to deliver a second output signal when the first timer stops; a timer for delivering, upon receipt signal, a third output signal which lasts for a predetermined time to control the solenoid-controlled valve; means for actuating the solenoid-controlled valve upon receipt of the third output signal, thereby to flush the toilet bowls; a second command circuit for delivering a fourth output signal to the first signal-transmitting circuit upon receipt of every detection signal, in response to each detection signal delivered subsequent to the first one delivered after each flushing of the toilet bowls, thereby to set in said first timer a time shorter than the first reference time by a predetermined length; a third command circuit for delivering a fifth output signal after each flushing of the toilet bowls in case the detecting appliance delivers no detection signal; and a second signal-transmitting circuit having a second timer which starts upon receipt of the fifth output signal and stops every time a second reference time longer than the first one elapses, thereby to deliver, when the second timer stops, a sixth output signal to said timer so as to flush the toilet bowls.

4,134,164

WATER STANDPIPE FOR TOILET SUMP TANKS

José S. Sanmartín Rial, San Ruperto a Soledad No. 2-1, La Pastora Caracas, Venezuela

Filed Oct. 17, 1977, Ser. No. 843,036
Claims priority, application Spain, Oct. 23, 1976, 452.665
Int. Cl.[2] E03D *1/30*
U.S. Cl. 4—353 **7 Claims**



1. Improvements in or relating to a water standpipe for toilet sump tanks, comprising in combination a hollow cylindrical standpipe body of smaller internal diameter in the upper third of its length and containing three horizontal perforations at an angle of 120° from one another to permit the exit of water to the service tank through respective discharger-silencer devices of hexagonal exterior shape; a H-shaped plunger containing a cavity in its lower portion for receiving a seal of rubber or any other appropriate material which remains firm in said cavity because of the latter's inverted frusto-conical shape; a hollow valve to permit the passage of water, the nozzle of which valve has a diameter slightly less than that of the rest of its circumference, so that a chamber is formed between said nozzle and the inner surface of the body of the standpipe; and a rod operationally connected to said plunger by a bolt, said rod being pivotally joined to the body of the standpipe by means of a conventional bolt.

4,134,165

FLUSH TOILET ACCESSORY

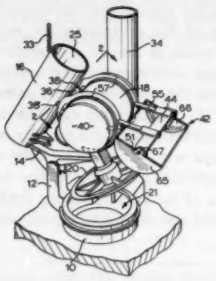
Clarence F. Phripp, R.R. #1, St. Clements, Ontario, Canada (N0B 2M0), and Norman R. Preston, 169 Ross Ave., Kitchener, Ontario, Canada (N2A 1V5)

Filed Mar. 20, 1978, Ser. No. 890,614
Int. Cl.[2] E03D *1/35*
U.S. Cl. 4—393 **9 Claims**

1. For use with a flush toilet mechanism having a valve member adapted to open and close a flush tank water outlet, and a cylindrical float member disposed with its axis horizontal, the valve member and the float member being fixed with respect to each other and being swingable about a horizontal axis parallel with the cylinder axis and spaced from both said members, the cylindrical float member being supported by a plate member parallel with the cylinder axis and having edges spaced inward from the ends of the cylindrical float member, an attachment for effecting a saving of water used in flushing, the attachment comprising:

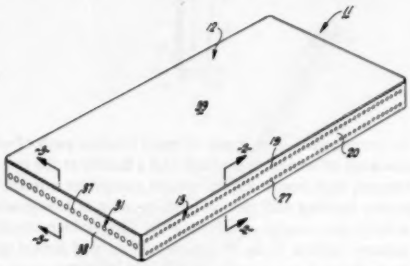
upwardly open receptacle means pivotally mounted on a frame element and adapted to be selectively set at a plurality of different orientations with respect to the frame element,

and means for attaching the frame element to the flush toilet mechanism such that the vertical location of the frame



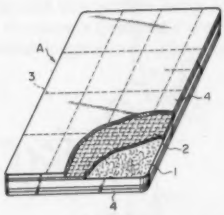
element with respect to the flush toilet mechanism can be selectively adjusted.

4,134,166
MATTRESS CONSTRUCTION
Paul S. Schuder, Rte. 1, Box 1155, Woodland, Calif. 95695
Filed Dec. 16, 1977, Ser. No. 861,565
Int. Cl.[2] A47C *27/08*
U.S. Cl. 5—345 R **4 Claims**



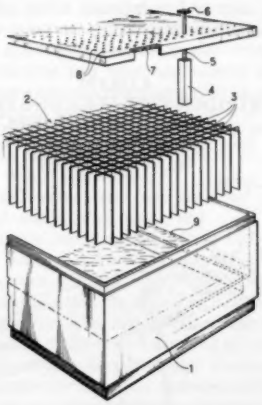
1. A mattress comprising:
a. an elongated body of resilient foam material having top and bottom panels and side panels and end panels;
b. a plurality of first parallel, flexible tubes disposed in said body and extending in a first plane parallel to said top panel and disposed in the longitudinal direction of said body;
c. a plurality of second parallel, flexible tubes disposed in said body and extending in a second plane parallel to said top panel and disposed in the transverse direction of said body;
d. a plurality of third parallel, flexible tubes disposed in said body and extending in a third plane parallel to said top panel and disposed in the transverse direction of said body, said first plane being located between said second plane and said third plane, said first tubes, said second tubes and said third tubes being arranged in vertical symmetry between said top panel and said bottom panel and having a different beam strength than said body, said first tubes being larger in diameter than said second and said third tubes; and,
e. means in at least some of said tubes for receiving and holding air therein, said receiving and holding means including air passages and valves in said air passages.

4,134,167
COMPOSITE PADDING MATERIAL
Nishiyama Kazuo, Tokyo, Japan, assignor to Sun Royal Co., Ltd., Tokyo, Japan
Filed May 31, 1977, Ser. No. 801,838
Claims priority, application Japan, Jun. 2, 1976, 51-071281[U]; Mar. 24, 1977, 52-036004[U]
Int. Cl.[2] B68G *5/00*
U.S. Cl. 5—361 R **5 Claims**



1. A composite padding comprising three substantially separate layers, an intermediate one of the layers being comprised of feathers having barbs and the intermediate layer of feathers having opposite surfaces, and respective outer layers adjacent the opposite surfaces of the intermediate layer, the outer layers being waddings of fibers, the barbs of the outer feathers projecting from the opposite surfaces of the intermediate layer and interlacing with fibers in the waddings of the outer layers.

4,134,168
HOSPITAL BED
Jean Guigan, 9, rue Jean Mermoz, 75008 Paris, France
Filed Feb. 17, 1978, Ser. No. 878,648
Claims priority, application France, Feb. 24, 1977, 77 05430
Int. Cl.[2] A47C *27/08*; A61G *07/02*
U.S. Cl. 5—369 **10 Claims**



1. A hospital bed comprising a tank, a liquid partially filling said tank, a plurality of juxtaposed, individual floats disposed within said tank with their lower ends contacting said liquid for immersion therein, and said liquid being free to circulate between the individual floats, each float being surmounted by a support and forming with the other floats a set of supports, means for restricting said floats to substantially vertical movement; whereby said set of supports define a substantially continuous horizontal bearing surface in the rest position.

4,134,169

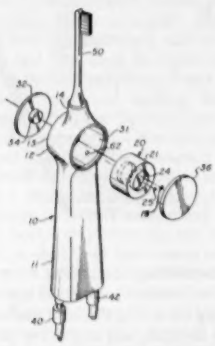
OSCILLATING POWER BRUSH

James A. Sinclair, 303 Present Rd., Missouri City, Tex. 77459

Continuation-in-part of Ser. No. 710,273, Jul. 30, 1976, abandoned. This application Sep. 1, 1977, Ser. No. 829,903

Int. Cl.[2] A46B *13/02*

U.S. Cl. 15—22 R **10 Claims**



1. In a power brush, a vibrator section including

A. a housing having a rotor opening therethrough defined by a borewall, said opening defining a pair of opposed ends and having a longitudinal axis, and cross sectional dimensions defined by said borewall,

B. a pair of closure caps disposed at said opposed ends,

C. a statically balanced rotor disposed in said opening, and

D. shaft means and shaft journal means on said closure caps and rotor, the shaft means being on one of them and the journal means on the other, the shaft means extending longitudinally into the journal means and being laterally supported thereby,

D1. said journal means being a number of bores having a larger diameter than said shaft means and permitting said rotor to rotate with its outer surface approaching said borewall of the rotor opening but not contacting the same, whereby said rotor may be thus rotated under the influence of a fluid stream directed tangentially into said rotor opening with said shaft means rolling over the bores of said journal bearing means.

4,134,170

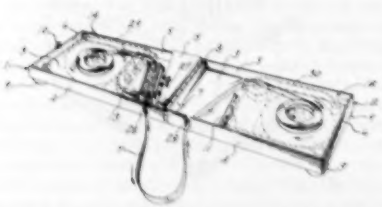
CARTRIDGE TAPE CLEANING DEVICE

Normand Boudreau, 462 Mercier St., St. John, Quebec, Canada

Filed Apr. 24, 1978, Ser. No. 899,875

Int. Cl.[2] B08B *11/02*

U.S. Cl. 15—97 R **4 Claims**



1. A cartridge tape cleaning device comprising a casing including a pair of complementary shallow box sections and a hinge connection, each of the shallow box sections including a bottom and a peripheral wall extending around the corresponding bottom and forming a pair of opposite side walls and a pair of opposite end walls with the hinge connection pivotally connecting adjoining end walls of the shallow box sections with the latter arranged in clamshell closing relationship, a partition member secured in each shallow box section intermediate the opposite end walls thereof and forming in the corresponding shallow box section a tape cartridge holding compartment extending flat against the corresponding bottom and adjacent the other of the corresponding end walls, a tape wiping device mounted in one of the shallow box sections externally of the tape cartridge holding compartment thereof and extending within the confines of the casing upon closure thereof, said shallow box sections each having an aperture through one side wall thereof for the passage of the tape therethrough and said tape wiping device includes a pair of wiping pads extending transversely of the shallow box sections and toward the aperture of the corresponding shallow box section and forming with said apertures a tape path which loops externally of the casing.

4,134,171

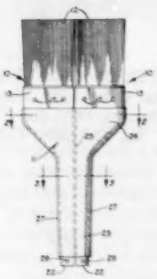
SEPARABLE PAINT BRUSH AND HOLDER ASSEMBLY

Francis L. Love, 7010 Reynoldsburg-New Albany Rd., New Albany, Ohio 43054

Filed Nov. 16, 1977, Ser. No. 852,151

Int. Cl.[2] A46B *17/02*

U.S. Cl. 15—146 **2 Claims**



1. In combination with a pair of paint brushes each of which includes a set of bristles at one end and a handle at the opposite end thereof; that improvement which comprises a holder for detachably holding said pair of paint brushes in bristle-adjoining, side-by-side coplanar relationship, said holder consisting of a unitary, hollow body of generally flattened funnel shape, said body being formed with an internal chamber open at its opposite ends and conforming generally to the aggregate size and shape of the handles of said pair of brushes when disposed in side-by-side relationship, the internal chamber of said body being defined at least in part by tapered wall surfaces, and said holder being operable to receive and frictionally hold the handles of said pair of brushes in positions in which the bristles of said brushes are disposed in adjoining, side-by-side substantially coplanar relationship.

4,134,172

DISPOSABLE TOOTHBRUSH

Oscar A. Arce, 15136 Swanee La., Baldwin Park, Calif. 91706

Filed Apr. 27, 1977, Ser. No. 791,415

Int. Cl.[2] A47K *7/02*

U.S. Cl. 15—167 R **3 Claims**

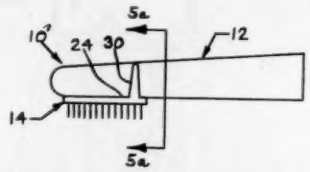
1. A disposable toothbrush comprising:

radially-expansible, collapsible tubular finger-receiving means having a closed end and an open end and being radially expansible from a non-expanded, open position to an expanded position to snugly receive a plurality of finger sizes;

tooth brushing means comprising (a) a base having oppositely-facing first and second surfaces and (b) bristles depending from said second surface, said first surface being oper-

ably attached to said finger-receiving means longitudinally thereof adjacent said closed end; and

at least one pair of opposing, radially-expansible ears extending upwardly from said base and adapted to at least partially encircle said finger-receiving means when a person's finger is inserted therein, said ears disposed on said base to



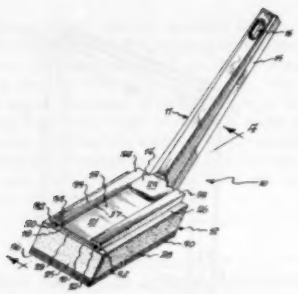
urge said finger-receiving means into contact with said person's finger at least over a gripping range having as its radial outer limit the non-expanded, open diameter of said finger-receiving means, whereby said ears urge said finger-receiving means into contact with said person's finger at least when said person's finger is smaller than said finger-receiving means' non-expanded, open diameter.

4,134,173

APPLICATOR WITH REVERSIBLE PAD

Charles D. Cupp, Lancaster; Bruce J. Matthies, Clarence Center, and Frederick J. Wood, Jr., Lancaster, all of N.Y., assignors to Shur-Line Manufacturing Co., Inc., Buffalo, N.Y.

Filed Jul. 25, 1977, Ser. No. 818,937
Int. Cl.[2] A46B *5/02*; B25G *1/06*
U.S. Cl. 15—210 R **1 Claim**



1. An applicator for use in applying a liquid coating, such as paint, to an object comprising:

an invertible unitary handle member including a blade having an elongated substantially rectangular plate-like body having opposite planar surfaces, an elongated handle extending longitudinally and centrally from one end of said blade and inclined to such blade surfaces, and a similar boss outstanding from each of said blade surfaces proximate the juncture of said blade and handle and having a raised surface space from the corresponding one of said blade surfaces a distance more than the thickness of said blade and having a width greater than that of said handle at said juncture but less than that of said blade leaving exposed marginal portions of said plate-like body; and

an end-for-end reversible elongated applicator pad including a cushion having opposite surfaces, bristle means on one such cushion surface, and an elongated open-ended flexible blade receiver having a web portion secured to the other such cushion surface, an outstanding flange portion extending along each longitudinal margin of said web portion, and spaced inturned flange portions extending toward each other from the outer margins of said outstanding flange portions and each having an inner surface opposing said web portion and spaced therefrom a distance corresponding to the thickness of said plate-like body to provide opposing channels for receiving said marginal portions, said inturned flange portions terminating in opposing edges spaced apart a distance at least equal to the width of either of such bosses;

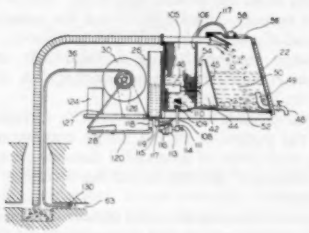
whereby, said blade is insertable into either open end of said receiver and slidable therealong with that one of said bosses facing said web portion being adapted to engage and deform the same to frictionally hold the handle member in a desired longitudinal position on said applicator pad.

4,134,174

SEWER AND CATCH BASIN CLEANER

Thomas P. Flynn, and James C. Wurster, both of Milwaukee, Wis., assignors to Super Products Corporation, Milwaukee, Wis.

Filed Aug. 29, 1977, Ser. No. 828,631
Int. Cl.[2] B08B *3/02, 9/04*
U.S. Cl. 15—302 **35 Claims**



1. In a mobile combination sewer and catch basin cleaner of the type including water injection and vacuum loading systems, said water injection system comprising a water tank, a water hose and a first pump means for delivering the water under pressure through said hose, said vacuum system comprising a body and a vacuum hose and a vacuum pump downstream of said vacuum hose and body for vacuum loading said body through said vacuum hose, the improvement comprising:

(a) fluid conduit means coupling the interior of said body to the interior of said water tank;

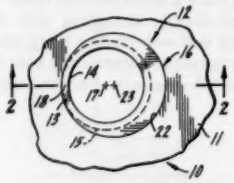
(b) means for delivering water from said body to said water tank through said conduit means; and

(c) filter means for removing solids from said water delivered to said water tank from said body wherein said filter means comprises a first screen means in said body to remove solids from said water before said water reaches said conduit means, a second screen means in said body intermediate said first screen means and said conduit, said second screen means having smaller openings than said first screen means for removing additional solids from said water, said second screen means comprising a cylindrical screen having a closed end and an open end, said open end of said cylindrical screen surrounding the opening of said conduit to said body and means being provided for periodically cleaning said second screen means, said periodic cleaning means comprising means for periodically admitting air to said conduit means, whereby vacuum pressure in said body will cause said air to pass through second screen means in a direction which is reverse to that of water flow therethrough.

4,134,175
NON-ROTATING BUSHING

Peter J. Contoyanis, Libertyville, Ill., assignor to Liquid Controls Corporation, North Chicago, Ill.

Filed Sep. 1, 1977, Ser. No. 829,599
Int. Cl.[2] F16C *32/00*
U.S. Cl. 16—2 11 Claims



1. A non-rotating sleeve type bushing, said bushing including, in combination,

a sleeve, said sleeve having

an exterior surface formed and adapted to be received in a suitable receptacle, such as a bearing housing, and

an interior surface formed and adapted to receive a rotating member, and

a flange member,

said flange member being integral with the sleeve,

at least one protion of said flange member extending outwardly from the central axis of the sleeve to a point located radially outwardly beyond the exterior surface of the radially adjacent portion of said sleeve,

said flange member having a continuous, smooth curve perimeter, and being characterized in that, with respect to the axis of the sleeve,

the radial distance between the exterior surface of the sleeve and the perimeter of the flange continuously increases from each point of least radial distance between the exterior surface of the sleeve and the perimeter of the flange member

to the point of maximum radial distance between the exterior surface of the sleeve and the perimeter of the flange

along at least a substantial portion of the two arcs defined between the aforesaid points of least radial distance to the maximum radial distance

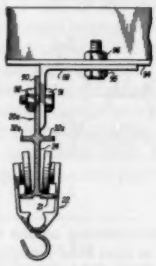
whereby a shearing resistance will be induced in those portions of the flange member corresponding to the aforesaid arcs in response to forces applied to said bushing in a direction tending to cause the bushing to rotate with respect to a receptacle within which it is received.

4,134,176
CURTAIN SUSPENSION ASSEMBLY

Richard W. Janson, Box 8110, Canton, Ohio 44711

Division of Ser. No. 617,508, Sep. 29, 1975, Pat. No. 4,014,071. This application Oct. 22, 1976, Ser. No. 734,990
Int. Cl.[2] A47H *15/00*
U.S. Cl. 16—94 D 10 Claims

1. A traverse rod for supporting curtains and the like which comprises a vertically disposed upper rod support portion and a lower portion, said lower portion including a vertical part and a part defining a horizontal flange at the bottom of said vertical part, the upper surface of said horizontal flange inclined upwardly towards said vertical part and receiving on each side of said vertical part wheels supporting curtain carriers, said wheels each being spaced from said vertical part and having an axis of rotation parallel to the underlying said upper surface, a horizontal plate means spaced above said flange, said upper rod support portion, said vertical part and said horizontal plate means being cruciform-shaped, said upper portion curved outwardly on either side at its bottom whereupon it merges into the top of said horizontal plate means, said vertical part being curved outwardly on either side symmetrically with said upper portion whereupon said vertical part merges into the bottom of said horizontal plate whereupon the shortest dimension across said curves in cross-section at 45° relative to said horizontal plate and said vertical part is at least twice the width of said vertical part, the rod being symmetrically disposed on either side of a vertically disposed plane parallel to the length of the rod and having a substantially uniform cross-

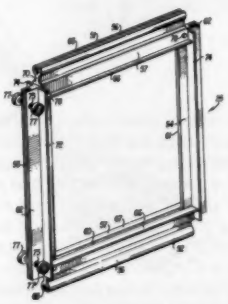


section within a further vertical plane perpendicular to the first-mentioned plane, an angle clip for attaching the rod to an overhead structure, said angle clip having a horizontal upper limb and a vertical limb directly depending from an edge thereof, said upper rod support portion rigidly attached directly to a vertical side of said vertical limb.

4,134,177
COUNTERWEIGHT CARRIAGE FRAME FOR STAGE CURTAINS AND THE LIKE

Richard W. Janson, P.O. Box 8110, Canton, Ohio 44711

Continuation-in-part of Ser. No. 617,508, Sep. 29, 1975, Pat. No. 4,014,071. This application Jan. 21, 1977, Ser. No. 760,861
Int. Cl.[2] A47H *15/00*
U.S. Cl. 16—96 D 14 Claims

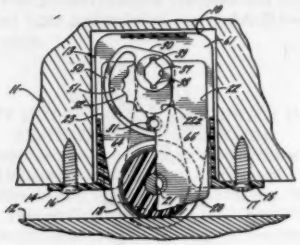


1. A counterweight carriage frame for stage curtains or the like which comprises: upper and lower bars, each of said bars including a substantially cylindrical portion along one longitudinal edge and a bifurcated portion along the opposite longitudinal edge defining a continuous groove, said groove facing inwardly and said cylindrical portion facing outwardly; a pair of side rods, each said side rod including a tongue along one longitudinal edge and at least one of said rods being provided with guide means along its opposite longitudinal edge, said tongues being received in said grooves to form a rectangular framework with said bars disposed in a parallel relationship on the top and bottom and said rods each connecting said bars at the sides in a perpendicular relationship to said rods; fastening means rigidly affixing said rods to said bars; a vertical guide member providing a verticlaly disposed path receiving said guide means for guiding the counterweight frame in its vertical movement; cable connection means provided in the cylindrical portion of each said bar for the attachment of cable to said framework which function to move the counterweight carriage vertically and simultaneously to raise and lower stage curtains or the like.

4,134,178
ADJUSTABLE ROLLER ASSEMBLY FOR SLIDING DOORS AND THE LIKE

Richard G. Stevens, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.

Filed Oct. 25, 1977, Ser. No. 844,803
Int. Cl.[2] E05D *13/02*
U.S. Cl. 16—100 **6 Claims**



1. A roller assembly for sliding doors and the like adapted for sliding movement along a supporting or guiding track, said roller assembly comprising

a case adapted for mounting on the door and forming a cavity that is open at the end adjacent the sliding edge of the door,

a carrier located within the cavity of said case and mounted for reciprocating movement relative to the open end of the cavity,

at least one roller journaled on said carrier adjacent the open end of said cavity and projecting beyond said case,

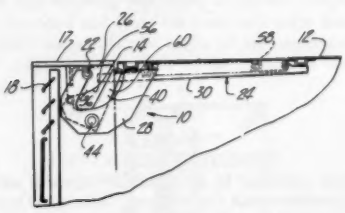
a cam with a rotatable shaft journaled on said case and a cam follower on said carrier for adjusting the position of said carrier.

said cam comprising a unitary member forming said shaft and an enclosed arcuate slot holding said follower captive therein and extending along an arc that is eccentric with respect to the axis of rotation of the cam, said case comprising a unitary member with the bearings for said cam shaft being formed by a pair of opposed walls of said case, said bearings opening into a pair of slots extending continuously from the bearings to one end of the case for admitting the cam shaft into said bearings as the carrier is inserted into the case.

4,134,179
HINGE ASSEMBLY

Elmer W. Silaghi, Farmington, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed Jun. 29, 1977, Ser. No. 811,408
Int. Cl.[2] E05D *1/00*
U.S. Cl. 16—128.1 **8 Claims**

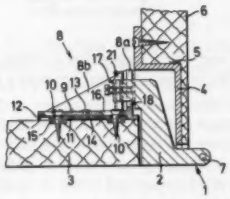


1. A hinge assembly for a vehicle having an engine compartment with a hood opening and a hood for closing said opening, said hinge assembly including hinge members connected to said hood and said engine compartment, respectively, said members being pivotally connected to each other for swinging movement of said hood about a horizontal axis from a closed to an open position through an arc greater than 90 degrees, said compartment hinge member including cam means fixed relative to said axis, *said hood hinge member pivoted on said axis and attached to said hood,* a force-transmitting member pivoted relative to *and mounted on* said hood member at a point spaced from said axis and having guide means engaging said cam means, a tension spring supported on said hood member and exerting a substantially constant force for swinging said guide means into engagement with said cam means to counterbalance the weight of said hood and resulting in a net lifting force varying from a maximum value at opening to a substantially constant minimum after opening and to said fully open position.

4,134,180
HINGE FOR DOOR LEAVES WHICH LIE FLUSH, PARTICULARLY A FURNITURE HINGE

Eberhard Schneider, Cologne, and Theodor Vitt, Porz-Eil, both of Fed. Rep. of Germany, assignors to Prämeta Präzisionsmetaal -und Kunststofferzeugniss G. Baumann & Co., Cologne, Fed. Rep. of Germany

Filed Nov. 21, 1977, Ser. No. 853,430
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654792
Int. Cl.[2] E05D *7/04*
U.S. Cl. 16—129 **7 Claims**



1. A hinge comprising first and second hinge elements, an intermediate hinge element, means movably connecting said first and intermediate hinge elements for relative movement therebetween, means mounting said second and intermediate hinge elements for relative linear movement therebetween, means for imparting relative linear movement between said second and intermediate hinge elements, said movement imparting means being a screw, said screw being free to rotate relative to both said second and intermediate hinge elements, said intermediate hinge element including a generally T-shaped projection, said T-shaped projection including a threaded bore threadably receiving said screw, and means for restraining said screw against linear movement relative to both said second and intermediate hinge elements and for irremovably screwing said screw to said second hinge element whereby rotation of said screw imparts relative motion between said second and intermediate hinge elements and retains any relative position therebetween.

4,134,181
APPARATUS FOR TRIMMING MEAT

Palmer W. Schneider, Jr., 2002 3rd Ave. SE., Austin, Minn.

Continuation-in-part of Ser. No. 673,905, Apr. 6, 1976, abandoned. This application Nov. 2, 1977, Ser. No. 847,704
Int. Cl.[2] A22C *17/04*
U.S. Cl. 17—1 R **5 Claims**

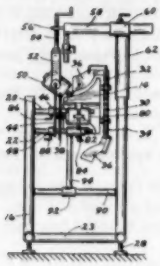
1. An apparatus for trimming an elongated loin of meat having a longitudinally disposed backbone including a generally cylindrical spine and a backbone extension protruding from the spine transversely thereof, a plurality of ribs extended from the spine transversely thereof and generally perpendicular to the backbone extension, and an eye of meat joined between the extension and ribs and forming a convex outer surface longitudinally of the loin; said apparatus including:

an elongated table having an upwardly concave surface longitudinally thereof and contoured for substantial sur-

face engagement with said convex surface of the loin to support the loin in longitudinal alignment with the table;

an elongated guide mounted with respect to the table and adapted to abut said backbone extension when said concave and convex surfaces are engaged, preventing substantial movement of the loin transversely of the table thereby maintaining the loin in a selected longitudinal orientation relative to the table;

first means for cutting in a first plane longitudinally of the table, second means for cutting in a second plane longitudinally of the table and in acute angular relation to said



first plane, and third means for cutting in a third plane longitudinally of the table and generally perpendicular to said first plane;

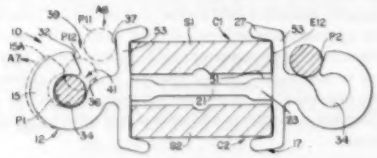
positioning means for selectively locating said first, second and third means with respect to the table whereby, when said loin is moved longitudinally on the table past the first, second and third means and while in said selected longitudinal orientation, the first means severs said eye from said backbone extension, the second means severs said ribs from said spine, and the third means severs said extension from said spine.

4,134,182

HOLDER FOR SKIS AND POLES

Henry S. Ramsby, 3600 C, N. Townhall, Traverse City, Mich. 49684

Filed Nov. 9, 1977, Ser. No. 849,970
Int. Cl.² A44B *21/00*
U.S. Cl. 24—81 SK **8 Claims**



1. A holder for a pair of skis and a pair of ski poles comprising:

a one piece body of flexible material incorporating a pair of spaced, opposed coat hanger-shaped portions connected one to the other by an integral flexible bar;

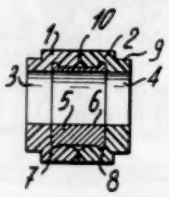
said clothes hanger shaped portions each incorporating a crossarm extending transverse of said bar and a generally question mark shaped hook having a base integrally connected with the central portion of said crossarm and extending away from said bar, said hook further having a semicircularly curved portion integrally extending from said base and substantially enclosing a pole receiving hole, said pole receiving hole opening laterally toward the corresponding crossarm through a gap between the free end of said curved portion and the joinder of said base and curved portion.

4,134,183

GRIPPING COLLAR

Walter Fischer, 2, chemin du Point du Jour, Morges, Vaud, Switzerland (CH-1110)

Filed Nov. 10, 1976, Ser. No. 740,407
Claims priority, application Switzerland, Nov. 24, 1975, 15181/75
Int. Cl.² F16G *11/00*
U.S. Cl. 24—132 AA **6 Claims**



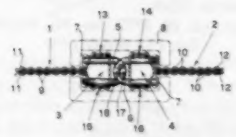
1. A gripping collar for elongated members, namely electric wires, comprising first, second and third discs, each said disc having an eccentric hole extending through out its entire axial length, said third disc disposed internally of said first and second discs, means securing said discs in axial relationship to each other to provide a unitary assembly of said three discs in axial juxtaposition with opposed faces of adjacent discs remaining in substantial abutment at all times, said securing means including a formation on each of said three discs concentrically mating with a formation on another of said discs with said mating formations disposed in a common plane normal to the longitudinally axis of the collar to preclude axial separation of said discs but allowing relative rotation thereof and thereby allowing lateral shifting of all three said holes relative one another to effect a gripping force on said wires when they are inserted in said eccentric holes.

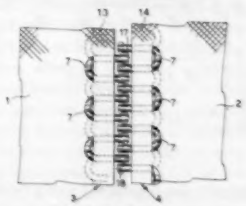
4,134,184

WOVEN SLIDE FASTENER

Carmelo Motta, Via Comerio, 3, 20145 Milan, Italy

Continuation of Ser. No. 577,272, May 14, 1975, abandoned. This application Sep. 30, 1976, Ser. No. 728,733
Claims priority, application Italy, May 14, 1974, 22681 A/74; Dec. 6, 1974, 30272 A/74
Int. Cl.² A44B *19/10*
U.S. Cl. 24—205.16 C **18 Claims**





1. A woven slide fastener comprising two woven supporting tapes, each having a two-arm tubular edge which carries a row of linking elements to be coupled by means of a slide, the row of linking elements of each of said supporting tapes comprising a meander of continuous synthetic monofilament inserted into

and interwoven with the two-arm tubular edge so that a series of exposed U-loops are formed along said tubular edge of said supporting tapes, said continuous synthetic monofilament being bounded by means of warp and weft threads in each one or the other of said arms, wherein the two arms of the tubular edge of each of said supporting tapes converge at the point of insertion of the linking elements of continuous synthetic monofilament the weft threads crossing from one arm to the other at a point spaced from said point of convergence so as to form said tubular edge.

4,134,185

WARP-KNIT SLIDE-FASTENER STRINGER HALF AND METHOD OF MAKING SAME

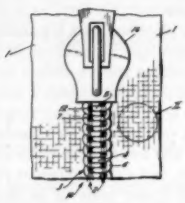
Helmut Heimberger, Locarno, Switzerland, assignor to Optilon W. Erich Heilmann GmbH, Cham, Switzerland

Continuation-in-part of Ser. No. 728,136, Sep. 30, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,467

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1976, 2614905

Int. Cl.[2] **A44B** *19/00*

U.S. Cl. 24—205.16 C **6 Claims**



1. A slide-fastener stringer comprising a pair of support tapes warp-knitted with a plurality of warp yarns forming longitudinally extending wale-forming warp pillars in the form of chains, a first group of weft yarns extending over the entire width of the respective tape and each laid into and extending over three of the warp chains of the respective tape in passing from course to course, and a second group of weft yarns laid into the warp chains of each tape over the entire width thereof and each comprising a weft yarn extending over and laid into two such chains in passing from course to course, said groups being mutually superimposed inlaid wefts, a respective continuous monofilament coupling element having a succession of turns and lying along one face of the respective tape for interdigitation with a coupling element on the corresponding face of the other tape upon movement of a slider along said coupling elements; and respective rows of stitching overlying the turns of the respective coupling elements and extending through the respective tape while having needle threads on the face of the tape opposite that along which the coupling elements are provided and lying between two wales formed by the respective warp pillars at edges of the respective tapes, each tape consisting exclusively of the respective said warp and weft yarns.

4,134,186

SAFETY BELT FASTENING

Kurt Krautz, Rosengarten, Fed. Rep. of Germany, assignor to Stakupress Gesellschaft fur Stahl-und Kunststoffverarbeitung mbH & Co., KG, Norderstedt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 717,710, Aug. 25, 1976, abandoned. This application Feb. 25, 1977, Ser. No. 771,896

Int. Cl.[2] **A44B** *11/26*

U.S. Cl. 24—230 A **19 Claims**

1. A safety belt fastening comprising

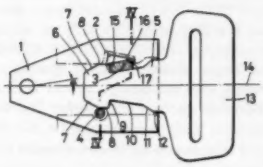
an elongate male member having a wide introduction head, a first lateral recess therebehind, and a shoulder between said introduction head and said first lateral recess substantially parallel to the insertion direction of said male member,

two spaced apart plates joined to form a female member having a substantially straight side wall, the bore of said female member being adapted to receive said male member,

said plates including therebetween at least one stationary guide surface means projecting into said bore from said side wall for guiding a cooperating side surface of said male member,

at least one of said plates including a second lateral recess remote from said side wall, and

a pivoted locking member retained within said second recess resiliently biased for engagememnt with said male member first lateral recess and pivoting within said second



recess with the insertion of said introduction head between said guide surface means and said locking member as it is guided by said guide surface means,

said guide surface means guiding said male member at least partially laterally from its primary insertion direction against said looking member to cause pivoting of said locking member within said second recess to its open release position,

said locking member pivoting into its lock position into said first male member lateral recess with the passage of said male member introduction head past said locking member as said head is guided by said guide surface means,

the end face of said locking member in its lock position being displaced longitudinally toward the entrance of said female member from said guide surface means.

4,134,187

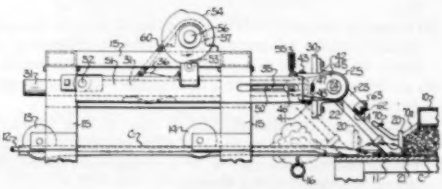
PILE FABRIC CRUSHING APPARATUS

John F. Damon, Sr., Warwick, R.I., assignor to Joan Fabrics Corporation, Lowell, Mass.

Filed Dec. 27, 1977, Ser. No. 864,661

Int. Cl.[2] **D06C** *23/04;* **D06J** *1/02*

U.S. Cl. 26—2 R **7 Claims**



1. In an apparatus for the continuous crushing of cloth, such as velvet or other pile type fabric, by the formation of random creases including an elongated treatment chamber having an entrance defining an entrance opening and in which treatment chamber the crushed cloth accumulates, guide plate means extending outwardly from the bottom of said entrance opening of said treatment chamber for directing the cloth into said treatment chamber, a plurality of pusher feet supported for forward and rearward movement along said guide plate means and extending transversely and in spaced-apart relationship adjacent the entrance end of said treatment chamber, said pusher feet being engageable with the cloth for moving the

cloth along said guide plate means to successively stuff the cloth through said treatment chamber with each forward movement thereof, the combination therewith of

(a) cam control means operatively associated with said pusher feet for moving said pusher feet into driving engagement with the cloth supported on said guide plate means during each forward movement of said pusher feet and for lifting said pusher feet out of driving engagement with the cloth during each rearward movement of said pusher feet, and

(b) gate means supported on the entrance end of said treatment chamber and extending partially across said entrance opening for permitting stuffing of the cloth into said treatment chamber while aiding in preventing withdrawal of the cloth from said treatment chamber upon rearward movement of said pusher feet, said gate means comprising individual spaced-apart finger elements including forward ends fixed to the top of said entrance opening and extending downwardly therefrom to form an upwardly diverging area adjacent the upper portion of said entrance opening, said finger elements being spaced above said guide plate means and including curved medial portions positioned between each of said pusher feet and free rearward ends.

4,134,188

METHOD FOR PROCESSING TUBULAR KNITTED FABRICS IN CONTINUOUS FORM

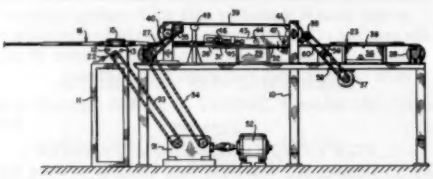
Clifford C. Bryan, Statesville, N.C., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 594,718, Jul. 10, 1975, Pat. No. 4,044,434, which is a continuation-in-part of Ser. No. 488,672, Jul. 15, 1974, abandoned. This application Jul. 29, 1977, Ser. No. 820,297

The portion of the term of this patent subsequent to Mar. 29, 1994, has been disclaimed.

Int. Cl.[2] D06C *5/00, 27/00*

U.S. Cl. 26—18.5 **4 Claims**



1. A method of processing tubular knitted fabrics in continuous form, which comprises

(a) delivering the tubular fabric in substantially dry condition,

(b) engaging the tubular fabric by internal edge portions and simultaneously advancing and laterally distending the fabric by its edges to a predetermined, uniform width,

(c) maintaining the fabric free of externally applied moisture during lateral distension of the fabric,

(d) discharging the distended fabric onto endless supporting surfaces while disengaging said edge portions in a zone of predetermined dimensions to accommodate controlled, lateral relaxation of the fabric,

(e) thereafter, grippingly engaging, supporting and conveying both faces of the disengaged laterally relaxed fabric between said endless supporting surfaces,

(f) steaming the relaxed fabric over its entire area while engaged between said supporting surfaces to accommodate further relaxation and adjustment of the fabric,

(g) said fabric being held in a controlled, continuous gripping engagement between said endless supporting surfaces throughout steps (d) and (e),

(h) thereafter, releasing said relaxed fabric from said gripping engagement while continuing to support said fabric across the full width thereof, and

(i) removing residual moisture from said supporting surfaces subsequent to the steaming of the fabric and prior to reengagement of the supporting surfaces with the fabric.

4,134,189

TENTERING CLIP CHAIN

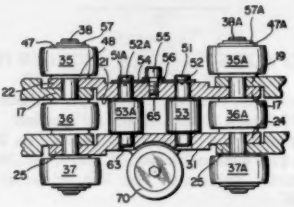
Hans H. Richter, Warwick, R.I.

Assignee: Marshall & Williams Company, Providence, R.I.

Filed Dec. 16, 1977, Ser. No. 861,551

Int. Cl.[2] D06C *3/02*

U.S. Cl. 26—89 **5 Claims**



1. A tentering clip chain comprising a plurality of tenter clip bases pivotally connected together, each base comprising an upper plate, a lower plate having a leg and a wall securing said upper plate in parallel spaced relation to said lower plate, a shaft provided with three rollers, means securing said shaft in said upper plate and said lower plate, a second shaft provided with three rollers, a second means securing said second shaft in said upper plate and said lower plate, means pivotally connecting the upper plate and lower plate of an adjacent base to said first mentioned shaft, and a second means pivotally connecting the upper plate and lower plate of an adjacent base to said second shaft on the side of said base opposite to said first mentioned adjacent base, a first axle pin provided with a sleeve roller, said axle pin being secured in said upper plate and said lower plate with said sleeve roller between said upper plate and said lower plate, and a second axle pin provided with a sleeve roller, said axle pin being secured in said upper plate and said lower plate with said last mentioned sleeve roller between said upper plate and said lower plate, a weight support roller, means rotatably mounting said weight support roller to said leg.

4. A tentering clip chain comprising a plurality of tenter clip bases pivotally connected together, each base comprising an upper plate, a lower plate and a wall integrally connected to said upper plate and to said lower plate to hold said upper plate and said lower plate in parallel spaced relationship, said upper plate having two ledges in the top surface providing a lower platform, an intermediate platform, and an upper platform, the underside of said upper plate having a ledge providing a bottom platform and a raised platform, the upper surface of said lower plate having a step providing an upper shelf and a lower shelf, the bottom surface of said lower plate having two steps providing an upper shelf surface, an intermediate shelf surface and a bottom surface, a first aligned bore in said lower platform and upper shelf, a second aligned bore in said intermediate platform and upper shelf, a third aligned bore in said intermediate platform and upper shelf, a fourth aligned bore in said upper platform and lower shelf, a shaft, provided with three rollers, supported in said first aligned bore with one roller abutting said upper plate, a second roller located between said upper plate and said lower plate, the last of said three rollers abutting said lower plate, means securing said shaft in said first aligned bore, a second shaft provided with three rollers supported in said fourth aligned bore, one of said last mentioned rollers abutting said upper plate, a second of said last mentioned three rollers positioned between said upper plate and said lower plate, the third of said last mentioned three rollers abutting said lower plate, means securing said second shaft in said fourth aligned bore, a first axle pin provided with a sleeve roller supported in said second aligned bore with said sleeve

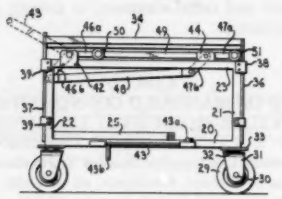
roller between said intermediate platform and said upper shelf, a second axle pin provided with a sleeve roller supported in said third aligned bore, with said last mentioned sleeve roller between said intermediate platform and upper shelf, the first aligned bore of an adjacent base pivotally connected to said second shaft on one side of said base, the fourth aligned bore of an adjacent base pivotally connected to said shaft on the other side of said base.

4,134,190

CASKET LIFTING DEVICE

Bruce M. Leathem, Carthage, and George E. Leathem, Bensenville, both of Ill., assignors to Liftco Industries, Inc., Carthage, Ill.

Filed Jun. 9, 1977, Ser. No. 804,894
Int. Cl.[2] A61G *17/00*
U.S. Cl. 27—27 **5 Claims**



1. Lift means for casket handling comprising, in combination:

two rectangular frames positioned erect, each with two substantially vertical front and rear end beams and substantially horizontal top and bottom beams, the said beams rigidly connected to one another at the ends thereof,

the said frames laterally spaced apart from and oriented parallel to one another,

an elongate, rigid cross beam connecting the front beams of the frames intermediate the upper and lower ends thereof, whereby to provide a rigid C-shaped frame assembly in plan view thereof,

four pivotable dolly wheels attached to the under-sides of the rectangular frames, one at each lower corner thereof,

a normally horizontal support beam positioned above each top rectangular frame horizontal beam in substantially parallel orientation thereto,

paired, spaced apart guide sleeves on the front and rear frame beams,

a guide member fixed to each end of each of the horizontal support beams and extending downwardly substantially normal thereto,

said guide members slideably received in said guide sleeves on the front and rear frame beams, and

means on said rectangular frames and cooperating there between for sequentially but simultaneously raising and lowering said horizontal support beams with respect to said rectangular frames.

4,134,191

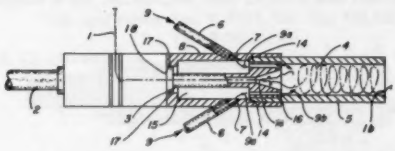
METHOD AND APPARATUS TO BLOW YARN AND PLUG FROM HIGH TEMPERATURE YARN TEXTURING JET DEVICE WHEN YARN FLOW STOPS

Dong W. Kim, and Leonard J. Aberle, both of Chester, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 720,174, Sep. 3, 1976, abandoned. This application Feb. 18, 1977, Ser. No. 770,123
Int. Cl.[2] D02G *1/16*; D02H *7/00*
U.S. Cl. 28—248 **6 Claims**

1. A method to prevent melted yarn when stopped in a high temperature texturing jet device, said texturing device comprising an injector having an internally disposed passage for yarn, fluid inlet means for supplying a heated fluid under pressure through said injector passage, a texturizing chamber concentrically disposed at one end of said injector passage and being adapted to contain a compacted yarn mass, said texturizing chamber having a larger cross-sectional area than the cross-sectional area of said injector such as to form an annulus between the outer periphery of said injector and the inner periphery of said texturizing chamber and fluid exit means positioned at said annulus adapted to discharge fluid from said texturizing zone in a direction substantially opposite to yarn path travel, said method comprising

sensing yarn stoppage with a sensor, and



actuating a valve in a high pressure fluid conduit communicating with at least two orifices in a sleeve surrounding at least the downstream portion of said injector, and

blowing any yarn in said texturing chamber out of said chamber with high pressure fluid and thereby pulling out any yarn in said injector with said yarn in said chamber,

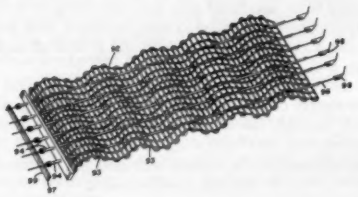
said high pressure fluid flowing from said conduit through said orifices and sleeve and into said chamber through said annulus so that when said yarn stops, said yarn will be removed rather than melted in said chamber and in said injector by said heated fluid and/or the heat latent in said chamber and injector, and so that said chamber and said injector are cooled by said high pressure fluid.

4,134,192

COMPOSITE BATTERY PLATE GRID

David B. Parkinson, Cleveland Heights, and James T. Konishi, Willowick, both of Ohio, assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 12, 1976, Ser. No. 731,137
Int. Cl.[2] B23D *19/00*; D03D *1/00, 3/08*
U.S. Cl. 29—2 **6 Claims**



1. A method for manufacturing a composite battery plate grid comprising the steps of:

providing a flexible prewoven web material formed of threads, said web material having undulations;

providing threads of an electrical conductor;

passing guide means through said undulations;

inserting a plurality of the conductors through said guide means into the web material such that the conductors are supported by interlacings of the web material and that the conductors and the web material together form a composite fabric having a first portion comprising at least a portion of both of said prewoven threads and said electrical conductor threads for subsequently supporting an active material to form a battery plate, and a second portion comprising essentially only said prewoven threads for subsequently supporting a battery plate formed when an active material is applied to said first portion; and

forming the ends of the conductors into a plate terminal for the collection of grid current.

4,134,193

SURFACE-CLEANSING TOOL

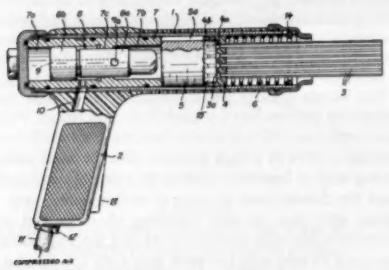
Fritz Lenzin, Kilchberg, and Joachim Schubert, Eptingen, both of Switzerland, assignors to Von Arx AG Maschinenfabrik, Sissach, Switzerland

Filed Jun. 29, 1977, Ser. No. 810,986

Claims priority, application Switzerland, Jun. 30, 1976, 8341/76

Int. Cl.² B21C *43/00*

U.S. Cl. 29—81 L **10 Claims**



1. A surface-cleansing tool comprising:

a tubular housing with an open front end;

a metallic anvil linearly reciprocable in said housing;

a light-weight cylindrical guide plate of a hard resinous material in said housing between said anvil and said front end, said resinous material having an energy-absorption limit of at least 10 kilogram-meters per cubic centimeter, a flow temperature of at least 100° C and an impact resistance at least equal to 50 kilogram-centimeters per square centimeter, said guide plate being provided with a multiplicity of generally parallel bores;

resilient means urging said guide plate rearwardly toward said anvil;

spacing means holding said guide plate separated from said anvil against the force of said resilient means, with formation of a clearance therebetween;

a set of metallic pins slidably lodged in said bores and projecting from said front end, said pins being provided with enlarged heads received in said clearance, said guide plate having a mass approximately equal to that of each of said pins; and

drive means including a reciprocable ram in said housing rearwardly of said anvil for iteratively striking said guide plate through the intermediary of said anvil, thereby entraining said pins with a lag determined by said clearance and substantially in unison with said guide plate.

4,134,194

SLIDE BEARING

Jan N. H. Loggers, Dordrecht, Netherlands, assignor to Houdstermaatschappij Alex A. Logges B.V., Dordrecht, Netherlands

Filed Jun. 16, 1976, Ser. No. 696,623

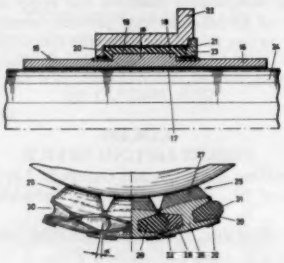
Claims priority, application Netherlands, Jun. 20, 1975, 7507413

Int. Cl.² B21D *53/10*

U.S. Cl. 29—149.5 R **8 Claims**

1. A method of making a slide bearing having a race and a housing, comprising: introducing into said housing with a radial clearance at least one element made of rubber material or the like and having projections extending therefrom, and closing said clearance by pressing said projections inwardly into said housing to thereby expand said projections; and holding said projections in expanded condition.

5. A slide bearing comprising: a housing, a race placed in said housing with radial clearance, at least one element made of rubber or rubber-like material interposed between said race



and said housing, and means for compressing said material axially to close said radial clearance to thereby connect said race to said housing.

4,134,195

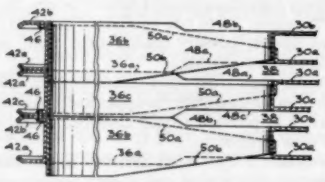
METHOD OF MANIFOLD CONSTRUCTION FOR FORMED TUBE-SHEET HEAT EXCHANGER AND STRUCTURE FORMED THEREBY

Fred W. Jacobsen, Los Angeles; Stanley T. Jakubowski, Carson, and Herman S. Weiner, Southgate, all of Calif., assignors to The Garrett Corporation, Los Angeles, Calif.

Division of Ser. No. 351,439, Apr. 16, 1973, Pat. No. 3,894,581. This application Jul. 15, 1975, Ser. No. 595,997

Int. Cl.² B23P *15/26*

U.S. Cl. 29—157.3 R **6 Claims**



1. The method of fabricating heat exchanger apparatus of the counter-flow type having inlet and outlet manifolds integrally combined with a heat exchanger core comprising the steps of:

forming a plurality of first plates to have an offset flange extending about the periphery of the plate, said flange being offset relative to the plane of the plate, and a protruding collar of intermediate depth surrounding a corresponding manifold section opening in each of the respective end sections at opposite ends of a central section;

forming a plurality of second plates to have an offset flange extending about the periphery of the plate, said flange being offset relative to the plane of the plate, and a protruding collar of depth greater than said intermediate depth surrounding a corresponding manifold section opening in each of the respective end sections at opposite ends of a central section;

forming a plurality of third plates to have an offset flange extending about the periphery of the plate, said flange being offset relative to the plane of the plate, and a protruding collar of depth less than said intermediate depth surrounding a corresponding manifold section opening in each of the respective end sections at opposite ends of a central section;

cleaning the plates and elements to be joined;

depositing a brazing alloy on all surfaces which are to be brazed;

stacking first plates by pairs and second and third plates by

pairs in flange-to-flange relationship with each other to define manifold sections communicating with associated passages for a first fluid in the central sections and passages for a second fluid extending through the central sections and having openings at opposed ends of the core;

brazing the assembled parts in a controlled atmosphere furnace until all adjacent surfaces are brazed; and

attaching integral fluid ducting to the brazed assembly.

4,134,196

METHOD OF PRODUCTION OF A WIRE-SHAPED COMPOSITE ADDITION MATERIAL

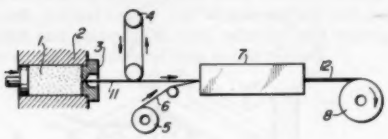
Kenkichi Yamaji; Oelhschlägel Dietrich; Hajime Abe, and Koichi Tamura, all of Hitachi, Japan, assignors to Hitachi Cable Ltd., Japan

Filed Jan. 27, 1976, Ser. No. 652,665

Claims priority, application Japan, Jul. 25, 1975, 50-90975

Int. Cl.² B22F *3/24*

U.S. Cl. 29—420 **7 Claims**



1. A method of production of a continuous length of composite wire for introduction as a linear additive into the interior of a melt of iron or steel comprising the steps of:

(a) extruding an addition material comprising at least one agent selected from the group consisting of calcium, magnesium and aluminum, in particulate form, to produce a compact wire of a predetermined size, and

(b) simultaneously with said extrusion enveloping and sealing said wire within a continuous metal covering by folding a tape of iron or steel tightly around said wire so that the tape is aligned parallel to the axis of the wire and that one widthwise marginal portion of the tape is tightly folded over the other widthwise marginal portion thereof in overlapping relation to produce a composite wire, said tape having a width, which is greater than the length of the circumference of said wire.

4,134,197

METHOD OF COATING PIPE WITH CONTINUOUSLY REINFORCED CONCRETE

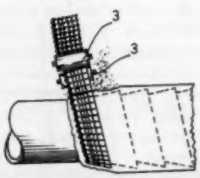
Marc Nijs, Harelbeke; Frits Vanassche, Zwevegem, both of Belgium, and Johannes A. De Kok, Hoogezand, Netherlands, assignors to N. V. Bekaert S. A., Zwevegem, Belgium

Division of Ser. No. 614,227, Sep. 17, 1975, Pat. No. 4,033,387. This application Mar. 25, 1977, Ser. No. 781,325

Claims priority, application United Kingdom, Sep. 27, 1974, 42142/74

Int. Cl.² B23P *3/00, 25/00*

U.S. Cl. 29—458 **10 Claims**



1. A method of coating a pipe comprising the simultaneous steps of rotating the pipe and moving it axially past a spraying station spraying concrete onto the outer surface of the pipe and winding onto the pipe a welded wire mesh comprising a plurality of longitudinal wires and a plurality of spaced-apart transverse wires welded to said longitudinal wires, the length of longitudinal wire between adjacent ones of at least some of said transverse wires being provided with a uniform degree of slack across the width of said strip, and stretching said mesh by means of the rotating pipe to longitudinally expand the mesh to the extent that the slack varies progressively across the width of said strip and one longitudinal side of the mesh forms a larger diameter than the other longitudinal side thereof.

4,134,198

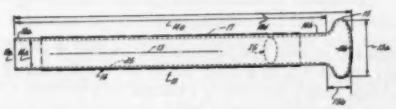
METHOD OF INSTALLING GRIP ON HANDLE

Robert E. Briggs, Cincinnati, Ohio, assignor to 'totes', Incorporated, Loveland, Ohio

Division of Ser. No. 608,348, Aug. 27, 1975, Pat. No. 4,016,640. This application Jan. 3, 1977, Ser. No. 756,400

Int. Cl.² B23P *11/02*

U.S. Cl. 29—450 **4 Claims**



1. A method of installing a grip on the handle of a baseball bat, said installation method comprising the steps of

providing said grip with a generally tubular portion at one end and a boot portion at the other end integral with said tubular portion, said grip having an average internal girth between about 5% and about 50% less than the average external girth of said handle for that portion of said handle on which said grip is to be mounted so as to establish a friction fit therebetween, an average wall thickness of between about 0.01 inches and about 0.10 inches, a percentage elongation at break between about 500% and about 1000%, a tensile strength at break between about 2000 psi and about 6000 psi, and a modulus at 200% elongation between about 100 psi and about 500 psi,

exposing the exterior surface of said grip to a vacuum sufficient to expand said grip throughout its longitudinal axis, said expansion being to an extent that permits said bat handle to be inserted therein without significantly touching the interior surface of said grip while the exterior surface is exposed to said vacuum,

orienting the free end of said bat handle adjacent the open end of said grip,

inserting said bat handle into said grip free end first until said free end bottoms out against said grip's boot after expanding of said grip, bottoming out of said free end against said bottom serving to properly position said bat handle relative to said grip,

thereafter releasing said vacuum from the exterior of said grip, same permitting said tubular portion to contract into a friction fit relation with said bat handle and said bottom portion to cover the bat knob,

severing said boot from said tubular portion of said grip, and

removing said boot from mounted relation with the bat knob, thereby exposing said knob and leaving said tubular portion in friction fit relation with said bat handle.

4,134,199

METHOD FOR PRODUCING BALL POINT PEN NIBS

Alfred T. Liguori, San Diego, Calif., assignor to Modern Mold & Tool Corp., Bronx, N.Y.

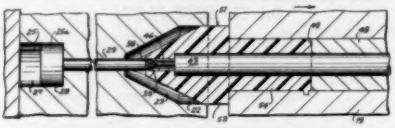
Filed Sep. 16, 1977, Ser. No. 833,763

Int. Cl.² B23P *11/00*

U.S. Cl. 29—441 BP **6 Claims**

1. The method of producing a ball point nib comprising

injection molding of a thermoplastic synthetic organic polymeric resin, an integral nib body member having a cavity for housing an ink transfer ball and provided with a central front opening surrounded by an inwardly directed temporarily pressure deformable annular lip and a passageway providing communication between said cavity and the rear of said body member and pressing an ink transfer ball of a diameter greater than the width of said front opening and not exceeding the width of said cavity through said opening into said cavity by expanding said opening under the influence of said ball pressed against said lip to permit the passage of said ball through said opening into said cavity, said body member being produced by injecting the resin in a molten state into a mold having front and rear sections, said front section having a first mold cavity



therein and an axial first core member located in said first mold cavity and having an annular undercut complementing said lip and being axially movable in a limited path between a forward position with said undercut being proximate the forward base of said first mold cavity and a rear position rearwardly of said forward position, permitting said molten resin to solidify in said mold, separating said front and rear mold sections to first withdraw the solidified body member from said first mold cavity and retract the core member to its rear position and further separating the mold sections to withdraw said core member out of engagement with said molded body member, said front annular lip delineated by said undercut returnably expanding consequent to the withdrawal of said core member from said solidified body member.

4,134,200

METHOD OF MAKING AN ELECTROMAGNETIC SOUND GENERATOR

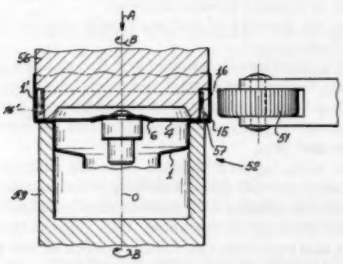
Domenico Frigo, Olmo (Vicenza), Italy, assignor to FIAMM S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio, Montecchio Maggiore (Vicenza), Italy

Filed Feb. 3, 1977, Ser. No. 765,077

Claims priority, application Italy, Feb. 4, 1976, 19876 A/76

Int. Cl.[2] H01F *41/00*

U.S. Cl. 29—594 **5 Claims**



1. A method of assembling a housing of ferromagnetic sheet metal and a circular ferromagnetic membrane spanning an open end of said housing, said membrane being designed to coact with an electromagnetic coil in said housing, comprising the steps of:

providing said housing with a deformable peripheral wall centered on an axis, said peripheral wall forming an internal annular shoulder facing said open end;

placing said membrane with its rim on said shoulder within a generally cylindrical end portion of said peripheral wall;

deforming said end portion radially inwardly all around said axis, with formation of an inbent neck adjacent said shoulder overhanging said rim, by pressing said end portion against a substantially cylindrical mandrel centered on said axis while holding said membrane onto said shoulder between said mandrel and a coacting support; and

axially flattening said neck against said shoulder, thereby sandwiching said rim between parallel plies of an annular portion of said peripheral wall folded back upon itself, said annular portion forming an external peripheral flange on said housing.

4,134,201

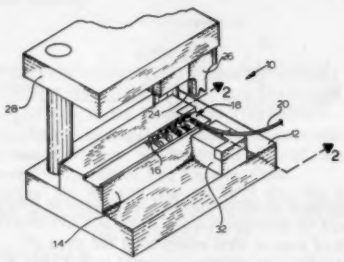
CRIMP DIE WITH RESILIENT ANVIL

Cletus McDonough, Elmhurst, and Leonard A. Sowinski, Chicago, both of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed May 18, 1977, Ser. No. 797,986

Int. Cl.[2] H01R *43/04*

U.S. Cl. 29—753 **6 Claims**



1. In a die for crimping an electrical terminal onto a wire lead, including a base with a terminal support structure for supporting and feeding a strip of terminals to a crimp station having an anvil thereat, and punch means over said anvil for moving into contact with a terminal at the crimp station and forming with said anvil an electrical connection between the wire lead and terminal, the improvement comprising:

a cantilever beam member made of high-impact resistant material mounted on said base having the anvil formed on the free end thereof and having a thickness which will provide deflection in the direction of movement of said punch means.

4,134,202

DRY SHAVER FOIL HEADS

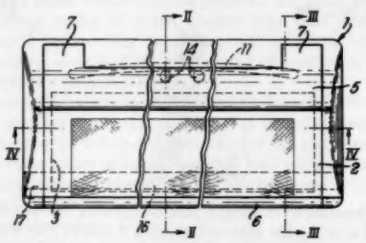
Alexis E. Buchholz, Hauterive, Switzerland, assignor to The Gillette Company, Boston, Mass.

Filed Nov. 3, 1977, Ser. No. 848,348

Claims priority, application United Kingdom, Nov. 4, 1976, 45849/76

Int. Cl.[2] B26B *19/02*

U.S. Cl. 30—43.92 **6 Claims**



1. A dry shaver foil head comprising:

a frame having first and second opposite end walls and first

and second opposite side walls, said first and second opposite end walls provided with respective first and second arcuate support surfaces;

a part-cylindrical shaving foil having first and second opposite arcuate end portions and first and second opposite longitudinal edge portions, said foil arcuate end portions respectively seated on said frame arcuate support surfaces;

first and second attachment means, said attachment means respectively attaching said opposite longitudinal edge portions of said foil to said frame;

at least one of said attachment means including a resilient rod, said resilient rod applying tension to said foil between said first and second attachment means to hold said foil substantially rigidly in position, said rod extending generally parallel to a said longitudinal edge portion of said foil, and said rod being acted upon at spaced points along its length by said foil and by said frame resiliently to curve said rod to apply said tension to said foil; and

said frame having a bore and a stud received in said bore, said stud having a part-conical head, and said frame acting on said resilient rod by way of said resilient rod bearing against said part-conical head, whereby said bearing action serves to retain said stud in said bore.

4,134,203

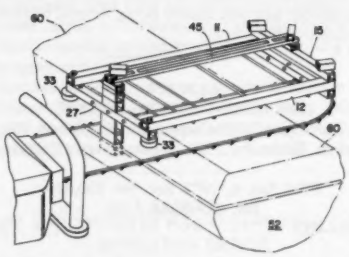
MULTIPLE USE CHAIN SAW MILL

George Grube, 14135 Olde Highway 80, El Cajon, Calif. 92021

Filed Nov. 23, 1977, Ser. No. 854,270

Int. Cl.[2] B27B *17/02*

U.S. Cl. 30—371 **15 Claims**



1. A device for guiding the cutting action of a chain saw which includes a chain saw bar, comprising; a mill frame, said mill frame including a pair of spaced apart, longitudinally extending members, a plurality of parallel runner members extending between said longitudinally extending members, and an end member removably secured to like ends of said longitudinally extending members; a slider assembly removably secured to said mill frame, including a pair of spaced, lateral members disposed above and below said mill frame, and securance means for selectively securing said lateral members to said longitudinally extending members; spacer means for removably securing a chain saw bar to said device, said spacer means being selectively positionable to a first position to secure said slider assembly to a chain saw bar, or to a second position to secure said mill frame to a chain saw bar; said spacer means including a plurality of spacer members, and bolt means for assembling a selected plurality of said spacer members in columns of selected length to define a spacing interval between said device and a chain saw bar.

4,134,204

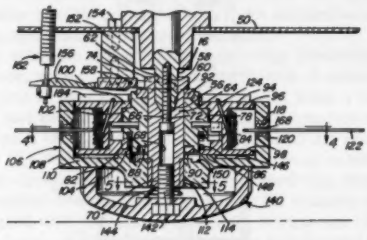
ROTARY FLAIL CUTTER SYSTEM

Bennie G. Perdue, 302 S. Houston School Rd., Lancaster, Tex. 78040

Filed Jun. 1, 1976, Ser. No. 691,764

Int. Cl.[2] A01D *35/26;* **A01G** *3/06*

U.S. Cl. 30—276 **3 Claims**



1. An apparatus for cutting vegetation and the like comprising a support, a rotary member journalled from said support for rotation at high speed in a cutting plane, having storage means and including a support portion defining a peripherally located bearing surface, at least one elongated flexible flail member having storage and free end portions, said storage end portion being supported from said storage means for feeding of said free end portion therefrom, said free end portion extending outwardly from the axis of rotation of said rotary member and being trained across said bearing surface, means for driving said rotary member in one direction of rotation, said bearing surface facing generally in said direction of rotation of said rotary member, said storage means including spool means upon which said storage end portion is wound, said spool means being supported from said rotary member for rotation relative thereto, said spool means being disposed substantially concentric with the axis rotation of said rotary member and rotatable relative to said support portion, a drive member mounted on said rotary member for rotation therewith and axially shiftable thereon for movement between first and second positions, said drive member and spool including coacting portions engageable with each other to drive said spool, in said one direction, with said drive member when said drive member is in said first position and operative to allow first and second predetermined angular rotation, only, of said spool in the opposite direction relative to said rotary member as a result of shifting of said drive member from said first position to said second position and then back to said first position from said second position.

4,134,205

VEGETABLE SLICER

Paul Heling, Solingen, Germany, assignor to Gerdes GmbH & Co., Schwelm, Germany

Filed Nov. 11, 1977, Ser. No. 850,801

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651568

Int. Cl.[2] B26B *3/00*

U.S. Cl. 30—287 **10 Claims**

1. A vegetable slicer comprising:

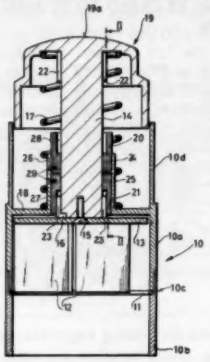
a downwardly open generally cylindrical housing provided with a tubular neck rising from a transverse wall thereof;

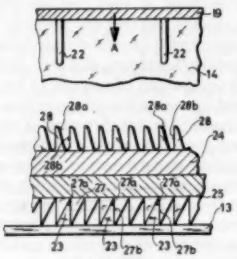
a vertical spindle rotatably and slidably guided in said neck, said spindle being provided at its upper end with a manual actuator;

cutter means within said housing secured to the lower end of said spindle beneath said wall, said cutter means forming with said spindle and said actuator an assembly movable in said housing;

spring means between said wall and said actuator tending to maintain said assembly in an elevated position with said cutter means raised above a surface supporting said housing;

first driving means including first camming formations on an upper part of said assembly and first coacting formations on said housing for advancing said assembly by an initial fraction of a rotary step upon manual depression of said actuator against the force of said spring means; and





second driving means including second camming formations on a lower part of said assembly and second coacting formations on said housing for advancing said assembly by a complementary terminal fraction of a rotary step upon restoration of said assembly to said elevated position by said spring means.

4,134,206

CUTTER FOR VEHICLE SAFETY BELTS

Ewald H. Beermann, Solingen, Germany, assignor to Martor-Argentax E. H. Beermann KG, Solingen, Germany

Filed Mar. 9, 1977, Ser. No. 775,757

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1976, 7623799[U]

Int. Cl.[2] B26B *29/02*

U.S. Cl. 30—294 **5 Claims**

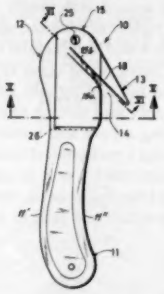
1. A cutting device, especially for the cutting of webs such as vehicle seat belts, said device comprising:

an elongated handle;

a head member formed on said handle at one end thereof, said head member having a generally planar surface, and a beak extending downwardly and defining a guide channel for a web to be severed converging toward said surface;

a cover plate member overlying said surface of said head member being provided with a planar face parallel to said surface; and

a flat blade sandwiched between said face of said cover plate member and said surface of said head member and having a cutting edge exposed at an inner end of said channel for severing said webs at least one of said members being formed with a depression accommodating said blade such that no gap between said members is present in the region of said cutting edge to catch pieces of said web, said depression having a depth substantially equal to the thickness of said blade and being formed only in said cover plate member, said head member being formed with a recess provided with said surface at the bottom thereof, said channel opening into a parallel-wall slot extending into said recess, said cover plate member being receivable in said recess and attached to said head member by at least one screw, said cover plate member being provided with a parallel-wall slot aligned with the slot of said head member, said blade having a pair of linear opposite parallel cutting edges one of which is exposed in said slots and is set back from the junction of said slots with said channel



away from the beak to preclude contact of said exposed edge with the fingers of the user, said depression having boundaries conforming to the configuration of said blade and surrounding the periphery thereof without play, said head member being formed with a pair of pins rising from said surface, said blade being provided with respective holes traversed by said pins and said cover plate member has a pair of blind bores accommodating said pins, said slots on opposite sides of the device extending into respective ramps inclined away from said blade, said beak, said head member and said handle being formed unitarily from a synthetic-resin.

4,134,207

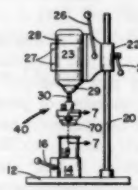
CAN BEAD CUTTING DEVICE

Samuel E. Buffington, 1980 Chipper Dr., Edgewood, Md. 21040, and Earl K. Skidmore, 1527 Becklow Ave., Baltimore, Md. 21220

Filed Sep. 6, 1977, Ser. No. 830,610

Int. Cl.[2] B23B *1/00*

U.S. Cl. 30—433 **4 Claims**



1. A device for removing at least part of the metal from a top U-shapped portion of a rolled end seam of a double seamed cylindrical can connecting the top with a side wall of a can body, comprising; a rotatable chuck, means on said rotatable chuck for adjustably fixing a rigid cutter blade over the seam connecting the top of the can with the can side wall for cutting away at least the upper outer portion of the top U-shaped seam lap positioned at the top of the can for separating the U-shaped outer lapped portion of the top seam from the remainder of the top portion of the seam, means for moving the outer severed

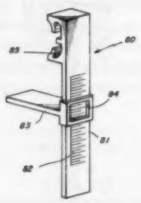
portion of the top seam downwardly along the body of the can comprising at least one roller carried by the chuck positioned above said severed portion of the lap of the upper seam positioned to engage the severed portion of the U-shaped seam moving the same away from the unsevered portion thereof whereby the outer lap of metal of the end seam may be accurately measured for quality controlled purposes.

4,134,208

ADJUSTABLE POSITIONING MEANS FOR ORTHODONTIC BRACKETS

Lawrence Pearlman, 601 Washington St., Norwood, Mass. 02062

Filed Sep. 22, 1976, Ser. No. 725,367
Int. Cl.[2] A61C *7/00*
U.S. Cl. 32—14 A **13 Claims**



8. An orthodontic handle for use in association with an orthodontic bracket to correctly position said bracket on the labial surface of a tooth,

said handle having a first means for supporting an orthodontic bracket and carrying second means for determining the position of said bracket on said tooth, said second means interlocking with said handle in a plurality of predetermined positions,

said second means comprising an enclosing collar mounting a positioning shelf with said collar being slidably mounted on said handle in frictional engagement therewith,

said handle having an undercut bracket gripping portion at the upper end thereof,

said bracket gripping portion gripping a bracket in sliding frictional engagement therewith whereby said bracket may be positioned on a tooth and adhered thereto with the handle slidably removed from the bracket thereafter.

4,134,209

DEVICE AND METHOD FOR MEASURING COIN DIE ROTATION ERROR

James D. Fariss, Jr., Wilmington, Del., assignor to Innovation Enterprises, Inc., Wilmington, Del.

Filed Apr. 10, 1978, Ser. No. 894,998
Int. Cl.[2] G07F *3/02*
U.S. Cl. 33—1 N **4 Claims**

1. A device for measuring the die rotation error of a coin comprising:

(a) a case member having a front face and a rear face and having a plurality of concentric circular markings on said front face and having

(b) a rotatable member in said rear face oriented such that the center of said rotatable member aligns with the centers of said circular markings, said rotatable member having an indicator for measuring angle of rotation; and

(c) a slide member adapted to slide into said case member, the slide member possessing a "V"-slot adapted to accept coins up to about 2 inches in diameter,

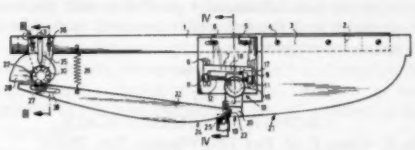
said case, rotatable and slide members being constructed of clear plastic, such that, in use of said device, a method of measurement of die rotation error is provided when a coin is placed in said slide in the "V"-slot and the obverse face of the coin is aligned vertically, and said slide is inserted into said case such that the obverse side of the coin is centered within the concentric circular markings, and the so-aligned case, slide and coin are turned over, and said indicator of the rotatable member is aligned with the vertical axis of the reverse side of said coin, the degree of die rotation error of the coin thereby being measured.

4,134,210

GUIDE TEMPLATE FOR SEWING MACHINES

Hans Scholl, Oerlinghausen-Lipperelhe, and Horst Bernewasser, Steinhagen, both of Fed. Rep. of Germany, assignors to Kochs Adler AG, Bielefeld, Fed. Rep. of Germany

Filed Aug. 19, 1977, Ser. No. 826,075
Int. Cl.[2] B43L *13/00*; D05B *21/00*
U.S. Cl. 33—23 H **6 Claims**



1. A guide template for a sewing machine for sewing workpieces of different form and/or size, comprising:

a machine frame,

a first template section,

a gear rack on a plate,

a third adjustable template section,

a second template section located between said first template section and said third template section, for extending the guide template, and held by said gear rack on said plate on said machine frame, and

pinion means with an adjusting knob, said pinion means engaging said gear rack and being rotatable by said adjusting knob for shifting on said gear rack.

4,134,211

CONTACTING CALIPER GAUGE

Pekka M. Typpo; Gunnar Wennerberg, both of Cupertino, and Tor G. Larsen, Saratoga, all of Calif., assignors to Measurex Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 774,158, Mar. 3, 1977, Pat. No. 4,107,606. This application Dec. 9, 1977, Ser. No. 858,813
Int. Cl.[2] G01B *7/06*
U.S. Cl. 33—147 L **9 Claims**

1. A contacting caliper gauge for measuring the thickness of a moving sheet material, said sheet material moving from the anterior to the posterior of the gauge, said gauge comprises:

a first base to one side of said sheet;

a first skid between said first base and said sheet material, said skid having one end hinged to said base near the anterior portion thereof;

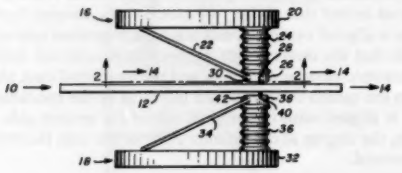
a first connecting means for elastically connecting the other end of said first skid to the posterior portion of said first

base, said means defining an axis which is substantially perpendicular to the surface of said sheet;

a first cap attached to said first connecting means adjacent said other end of the associated skid, said cap has a flat surface substantially parallel to said sheet on the posterior end thereof and a rounded surface near the anterior portion thereof;

a second base to the other side of said sheet;

a second skid between said second base and said sheet material, said skid having one end hinged to said second base near the anterior portion thereof;



a second connecting means for elastically connecting the other end of said second skid to the posterior portion of said second base, said means defining an axis which is substantially perpendicular to the surface of said sheet and is substantially in linear alignment with said first connecting means; and

a second cap attached to said second connecting means adjacent said other end of the associated skid, said cap has a flat surface substantially parallel to said sheet on the posterior end thereof, and a rounded surface near the anterior portion thereof.

4,134,212

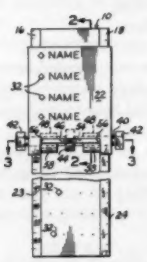
GROWTH MEASURING SCALE

Cloy L. Allen, P. O. Box 224, Wingate, Tex. 79566

Continuation-in-part of Ser. No. 767,592, Feb. 10, 1977, abandoned. This application Nov. 1, 1977, Ser. No. 847,632

Int. Cl.[2] G01B *5/02, 3/20*

U.S. Cl. 33—169 R **5 Claims**



1. A growth measuring apparatus, comprising:

an elongated panel having scale indicia extending longitudinally along one marginal edge and having a back surface adapted to be vertically secured to a wall,

said panel having lateral coextensive flanges extending outwardly in diverging relation from said back surface;

a box-like head member having a vertical front wall transversely spanning the panel and integral with opposing side walls and having a coextensive longitudinal recess formed on the inner surface of each side wall for cooperative reception of said panel flanges in sliding relation;

an axle horizontally journalled at the lower end portion of said head member in said side walls;

friction means including a friction wheel axially connected with said axle intermediate its ends for frictionally engaging and moving said head member with respect to said panel; and,

a head bar having means at one end portion at least partially surrounding said axle on opposing sides of said friction wheel for horizontally orienting said bar in one position and frictionally locking said head member against movement relative to said panel when said head bar is in another position.

4,134,213

HEIGHT MEASURING DEVICE

Walter P. Kushmuk, Niles, Ill., assignor to Continental Scale Corporation, Bridgeview, Ill.

Filed Nov. 18, 1976, Ser. No. 743,089

Int. Cl.[2] G01B *5/00*

U.S. Cl. 33—169 R **2 Claims**

1. A height measuring scale for measuring the height of persons in either English units of height measurement or metric units of height measurement or both which comprises a fixed rod, said fixed rod having a face sufficiently large to accommodate two columns of numerical indices in side-to-side relationship, a column of English height measuring units vertically disposed on said face spaced apart in numerical sequence, a column of metric height measuring units vertically disposed on said face spaced apart in numerical sequence in side-to-side relationhip with said column of English height measuring units, said fixed rod also having an upper stepped end with a step offset between the indices for English units and metric units having a height of 0.18 inch or 0.46 centimeter to compensate for and round off the difference between said units, a vertically movable rod telescopically mounted in said fixed rod so as to be vertically slidable with respect to said fixed rod, said movable rod having a face sufficiently large to accommodate two columns of numerals in side-to-side relationship, a column of English height measuring units vertically disposed on said face spaced apart in numerical sequence, a column of metric height measuring units vertically disposed on said face spaced apart in numerical sequence in side-to-side relationship with said column of English height measuring units, and a headpiece comprising an elongated member extending at right angles outwardly from said faces of said fixed rod and said movable rod, said headpiece being pivotally mounted to move from a vertical position to a horizontal position on mounting means fixed to said movable rod and slidable vertically over said fixed rod, said elongated member having a free outer end the under side of which is adapted to contact the head of a person whose height is to be measured when said member is in said horizontal position and an inner end having an under side which is transversely horizontal and rests against either said fixed rod or said movable rod when said member is in a horizontal position, said under side of said inner end serving to index the height measurments on the columns of numerals on said fixed rod, the inner end of said elongated member also being connected to position said movable rod vertically when its outer end is in contact

with the head of a person whose height is to be measured and the upper stepped end of said fixed rod serving as indices for the height measurements on the columns of numerals on said movable rod.

4,134,214

FREEZE-DRYING PROCESS FOR THE PREPARATION OF MENINGOCOCCUS VACCINE WITHOUT DEGRADATION OF POTENCY

Glen D. Graham, Rocky Hill, and William A. Sklarz, Edison, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 5, 1977, Ser. No. 822,309
Int. Cl.[2] F26B *5/06*
U.S. Cl. 34—5 5 Claims

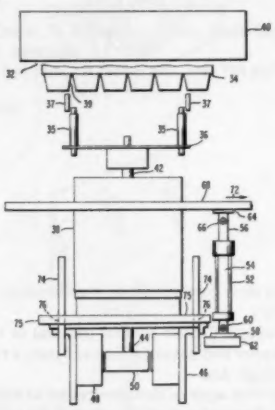
1. An improved process for preserving vaccine derived from Group A and Group C polysaccharides of *N. meningitidis* wherein the molecular weight is not degraded which improvement comprises lyophilizing an isotonic solution of said polysaccharide which is maintained at a temperature of from −20° C. to −30° C. until the moisture content is less than 3%.

4,134,215

PROCESS FOR DRYING HYDROPHOBIC ARTICLES

Henry Y. Kuhl, Kuhl Rd., Flemington, N.J. 08822

Division of Ser. No. 696,974, Jun. 17, 1976, Pat. No. 4,064,635.
This application Oct. 17, 1977, Ser. No. 842,858
Int. Cl.[2] F26B *5/08*
U.S. Cl. 34—8 5 Claims



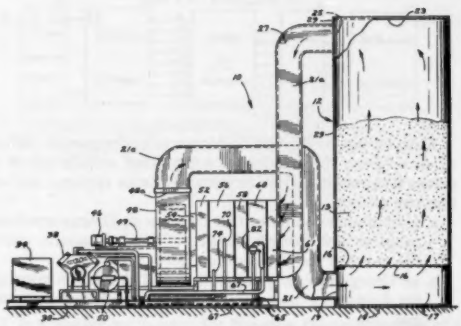
1. A process for drying hydrophobic articles comprising:
(a) positioning a wet article within a drying zone;
(b) placing protruding stud members of a carriage in contact with upwardly extending cavities defined in the irregularly shaped undersurface of a wet article;
(c) moving the carriage upwardly to lift the article from the drying zone into a spinning position;
(d) spinning the article by rotating the carriage at such speed sufficient to expel any liquids therefrom by centrifugal force;
(e) gathering the liquids expelled from the hydrophobic article by the location of a cylindrical liquid gathering surface around the article in the spinning position;
(f) returning the article to the drying zone therebelow by moving the carriage downwardly out of contact with the article; and
(g) removing the article from the drying zone.

4,134,216

PRODUCT DRYING APPARATUS

Robert D. Stevens, 6614 Horshoe Curve, Excelsior, Minn. 55331

Filed Nov. 18, 1977, Ser. No. 852,710
Int. Cl.[2] F26B *21/06*
U.S. Cl. 34—77 4 Claims

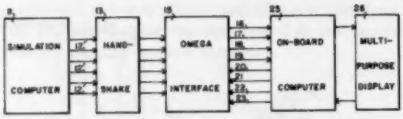


1. A particulate product drying apparatus utilizing heat from the moisture removed from a moisture laden product contained within a sealed product drying bin to heat the air used to remove moisture from said product, having in combination
a conduit forming an air supply inlet into said product drying bin and a discharge air conduit respectively being secured to the inlet and outlet ports of a sealed product drying bin,
a blower having sufficient air moving capacity to pass air through said product bin,
means driving said blower,
a hot gas evaporator substantially parallelepiped in form disposed in an upstanding position communicating with said discharge air conduit and receiving air passing through said drying bin,
means comprising a passage forming an interface between said evaporator and said discharge air conduit and said passage being of a size substantially the extent of the adjacent side of said evaporator,
an air cooled condensor of a like size as said evaporator disposed in a parallel spaced facing relation thereto,
means comprising a passage for communication between said evaporator and said condensor,
means comprising a passage between said condensor and inlet side of said blower, said passage being of like extent as the adjacent side of said condensor,
means sealing said evaporator, condensor and said related passages in connection with said blower against the entry of outside air,
means passing a gas or vapor through said evaporator condensing the moisture from the incoming air discharged from said product bin by action of said blower and extracting the heat from said air,
means passing the heat from said moisture laden air to heat the coils of said condensor heating the dehumidified air drawn by said blower into said condensor from said evaporator,
said blower drawing heated dehumidified air into its inlet side from said condensor, and
means passing said dehumidified air from said blower into the inlet port of said drying bin.

4,134,217
OMEGA SIMULATION

Scott B. Neilson, Kensington, Md., assignor to The Singer Company, Binghamton, N.Y.

Filed Mar. 11, 1977, Ser. No. 776,775
Int. Cl.[2] G01C *21/00*; G09B *9/08*
U.S. Cl. 35—10.2 6 Claims



1. An Omega navigation training system designed to indicate to an operator the position of a simulated vehicle which receives transmissions from simulated Omega stations, said system comprising:

a. a simulation computer that contains an Omega simulation program generating a plurality of Omega stations, and the functions of the Omega receiver;

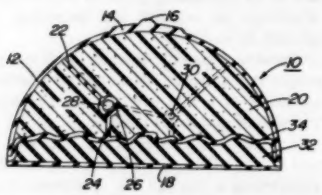
b. an Omega interface coupled to said simulation computer for formatting the outputs of said simulation computer; and

c. an on-board computer coupled to said Omega interface, said on-board computer processes the formatted simulated Omega navigation information received from said Omega interface and displays said information in the form of updated geographical position of said simulated vehicle.

4,134,218
BREAST CANCER DETECTION TRAINING SYSTEM

Calvin K. Adams; Mark K. Goldstein; Deborah C. Hall; Larry L. Hench; Michael C. Madden; Henry S. Pennypacker, Jr., and Gerald H. Stein, all c/o of The J. Hillis Miller Health Center, Center for Ambulatory Studies, University of Florida, Box J-17, Gainesville, Fla. 32610

Filed Oct. 11, 1977, Ser. No. 841,076
Int. Cl.[2] G09B *23/28*
U.S. Cl. 35—17 19 Claims



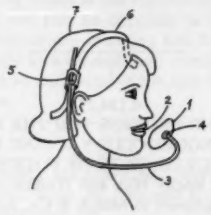
1. A lifelike model of a human female breast comprising an elastomeric membrane, first means simulating glandular, connective and/or skeletal tissue, the first means being connected to the membrane to define a chamber therebetween, second means simulating adipose tissue disposed within the chamber, the first means being harder than the second means and having an irregular surface within the chamber, and third means simulating at least one tumor fixed within the chamber.

4,134,219
SPEECH REFLECTOR

Juri Vilms, 1330 Harker Ave., Palo Alto, Calif. 94301

Continuation of Ser. No. 737,839, Nov. 1, 1976, abandoned. This application May 24, 1978, Ser. No. 908,938
Int. Cl.[2] G09B *19/04*
U.S. Cl. 35—35 C 1 Claim

1. A speech reflector comprising a supporting means adapted to engage the head of the user, and a small sound reflecting plate having its largest dimension in the range of one to five inches, the said plate being tiltably secured to the said

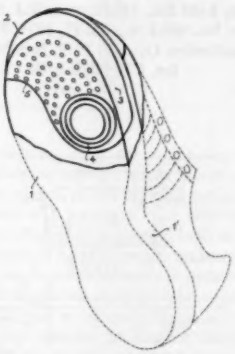


supporting means and therefrom positioned adjacent the mouth of the user at an angle at which sound is thereby best directed by a single reflection from the user's mouth to her ear.

4,134,220
SPORTS SHOES

Adolf Dassler, Herzogenaurach, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,603
Claims priority, application Fed. Rep. of Germany, Aug. 6, 1976, 2635474
Int. Cl.[2] A43B *5/00, 13/12*
U.S. Cl. 36—30 R 7 Claims



1. A sports shoe comprising, in combination:-

(a) an upper;

(b) a sole of soft flexible plastics material or rubber secured to said upper and having a forward part, a running surface and an edge; and

(c) a protective layer of chrome-leather extending around at least the forward part of the edge of the sole and covering the running surface of the forward part of the sole as far as the inner ball of the foot of a wearer of the shoe.

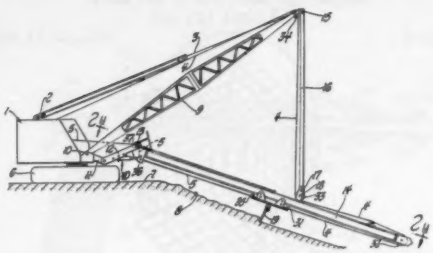
4,134,221
EARTH PLANER

Louis Scodeller, Windsor, Canada, assignor to Scofan Contractors Limited, Windsor, Canada

Filed Oct. 4, 1977, Ser. No. 839,247
Claims priority, application Canada, Jan. 2, 1977, 270800
Int. Cl.[2] E02F *3/46*
U.S. Cl. 37—116 10 Claims

1. An earth grading machine comprising a reciprocable earth moving element, a vertically inclinable track member guiding reciprocatory movements of the earth moving element, power means for reciprocating said element, and means for adjusting the vertical inclination of the track member, said last named means including support means accommodating pivotal movement of the track member in a vertical plane

about both a first axis adjacent one end of the track member and about a second axis spaced longitudinally of the track member from said first axis, means for adjustably raising and



lowering said second axis, and adjustable length means interconnecting the track member and its support means in laterally offset relation to said first axis.

4,134,222

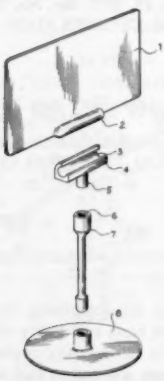
TICKETING SYSTEM

Nicholas M. Orsos, 70 Wilberforce Ave., Rose Bay, New South Wales 2029, Australia

Filed Nov. 24, 1976, Ser. No. 744,837

Int. Cl.[2] G09F *7/20*

U.S. Cl. 40—606 **6 Claims**



1. A ticketing arrangement for carrying price information pertaining to foodstuffs comprising support means formed with a first cylindrical recess, a socket member defining a second cylindrical recess and formed with a cylindrical boss for insertion into said first cylindrical recess whereby said socket member may move rotatably therein and has its central axis extending substantially perpendicular to the central axis of said second cylindrical recess, and a ticket which is formed in one piece with a cylindrical portion along one edge thereof for mating insertion within said second cylindrical recess whereby said ticket may rotate about said central axis of said second cylindrical recess for selective variation of the orientation of said ticket.

4,134,223

ELECTRICAL TRIGGER MECHANISM FOR FIREARMS

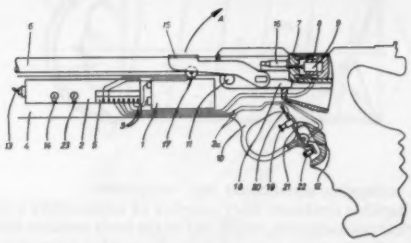
Siegfried Hillenbrandt, Albstadt, and Dieter Keppeler, Langenau, both of Fed. Rep. of Germany, assignors to Carl Walther GmbH, Ulm, Danube, Fed. Rep. of Germany

Filed Dec. 1, 1977, Ser. No. 856,683

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1976, 2656996

Int. Cl.[2] F41C *19/12*

U.S. Cl. 42—84 **6 Claims**



1. In a trigger mechanism for firearms, the combination of a frame, a breech block pivotally mounted in said frame and pivotable downwardly from a closed position to a loading position, a movable firing pin in said breech block, an electromagnet in said breech block having a coil and a movable armature actuated by said coil, said armature drivingly connected to said firing pin to move the same when said coil is energized, means for defining a source of electrical energy in said frame and connected electrically to said coil, and means for disconnecting said electrical connection when said breech block is pivoted into its loading position so that energization of said electro-magnet and thus actuation of the firing pin is prevented.

4,134,224

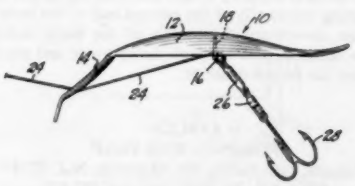
FISHING LURES

Kenneth W. Clark, 6889 Curtis Dr., Coloma, Mich. 49038

Filed May 31, 1977, Ser. No. 801,737

Int. Cl.[2] A01K *85/00*

U.S. Cl. 43—42.05 **7 Claims**

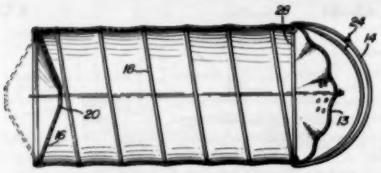


1. A fishing lure comprising an elongated body including an angularly outwardly extending part at the foremost end thereof having a line receiving aperture, and a line guide projecting laterally from said body in substantially the same direction as said angularly extending part at a part of said body spaced rearwardly from said angularly extending part and rearwardly of the longitudinal center of gravity of said body whereby a line extends alongside and clear of said body rearwardly of said foremost line-receiving aperture.

4,134,225
COLLAPSIBLE BAIT TRAP

Kenneth L. Welch, Carthage, Mo., assignor to Virgil W. Rogers, Oronogo and Max H. Glover, Webb City, both of, Mo., part interest to each

Filed Feb. 7, 1977, Ser. No. 766,033
Int. Cl.[2] A01K *69/00*
U.S. Cl. 43—100 **4 Claims**



1. A collapsible aquatic bait trap, comprising:

a collapsible container body member of substantially cylindrical conformation, a first end of the body member being closed and a second end of the body member being at least partially open;

a funnel member connected to the body member at the second end thereof and having a central aperture formed therein for providing at least a partial opening in the second end of the body member to communicate the interior of the body member with ambient, the funnel member extending into the interior of the body member to define a pathway thereinto;

a helical spring member disposed within the body member extending from said first end to said second end thereof, the spring member having outermost surfaces thereof abutting portions of the inner surface of the body member and maintaining the body member in said substantially cylindrical conformation; and,

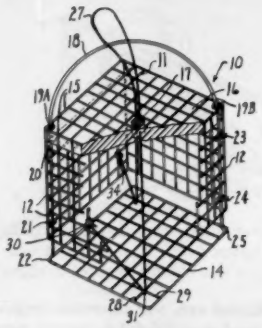
handle means for retaining the spring member under compression when the body member and spring member are collapsed inwardly thereof along the longitudinal axes thereof, the handle means comprising an elongated member attached at opposite ends thereof to diametrically spaced points on the first end of the body member, the elongated member being graspable when the body member and spring member are in an extended, uncollapsed conformation to allow the trap to be carried, the elongated member further being received substantially about the periphery of the collapsed body member and spring member to maintain the trap in a collapsed conformation for compact storage thereof, wherein the body member is adapted to contain water and wherein the funnel member is formed of a non-rigid material and is supported only by the structural integrity of said material, the funnel member inverting outwardly of the second end of the body member on downward disposition of the body member to cause water to flow through the aperture and exert force against the funnel member.

4,134,226
FISHING CRAB TRAP

Ronald Petrella, I-15 Sutton Dr., Matawan, N.J. 07747

Filed Aug. 24, 1977, Ser. No. 827,122
Int. Cl.[2] A01K *71/00*
U.S. Cl. 43—102 **2 Claims**

1. A crab capturing basket referred to as a crab cart that comprises four open screening sides formed in a boxlike form with a bottom screen and a top screen in which a floatation packing is affixed to the top screen and the top screen is affixed to all four sides and said unattached bottom screen is attached to a handle, said handle slidably affixed to said basket to permit said bottom screen to drop away from said four sides when said floatation packing is lifted by buoyancy in the water, a tethering rope connected to said crab basket, both ends of said rope passed through said top screen and through said floatation packing and through said bottom screen and tied to opposite sides of said basket above the bottom screen, said bottom

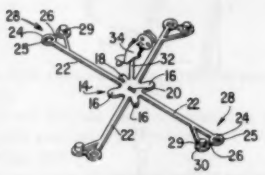


screen to be pulled closed against the bottom edge of said sides when said tethering rope is pulled to lift said basket out of the water.

4,134,227
PARACHUTE KIT

Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development, Skokie, Ill.

Filed Feb. 25, 1977, Ser. No. 772,303
Int. Cl.[2] A63H *33/20*
U.S. Cl. 46—86 R **9 Claims**



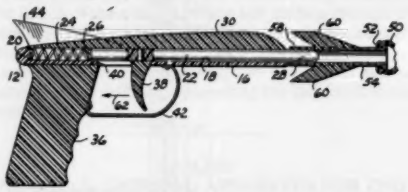
1. A toy parachute kit comprising an integrally formed frame having a central base, a plurality of radially extending resilient arms normally substantially coplanar with said base, canopy attaching means secured to said arms, and a canopy attachable to said canopy attaching means, said canopy and said arms being attached so that movement of said arms toward the normal position thereof automatically stretches said canopy open, and a tubular member, said frame insertable into said tubular member with said arms bent toward each other and said canopy collapsed to block the passage of air blown into said tube, said tubular member when engaged by a person's mouth and with the person's air blown therein causing said frame with the canopy attached thereto to be ejected from said tubular member and into the air so that said resilient arms spring toward the normal radially extended position thereof automatically stretching said canopy attached thereto to the open position thereof to retard the descent of said frame and canopy.

4,134,228

INFLATED TOY BALLOON LAUNCHER

Nilson V. Ortiz, San Francisco, Calif., assignor to Nilson V. Ortiz and Francisco R. Rollojay, part interest to each

Filed Jan. 3, 1977, Ser. No. 756,590
Int. Cl.[2] A63H 3/06
U.S. Cl. 46—88 2 Claims



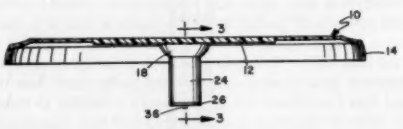
1. A toy rocket launcher, comprising:
a body having a handle and having an elongated groove lying substantially in the plane of the body, and said groove being open at one end through a marginal surface of said body; said body being flat and disc-like
an elongated shaft having a length substantially less than the length of the groove and being axially reciprocable therein and having a head end portion;
resilient means comprising a spring disposed within the other end portion of the groove for normally biasing said shaft head end portion beyond the open end of the groove;
toy rocket means releasably connected with said shaft head end portion,
said toy rocket means including a toy balloon having an opening, and,
a tube having one end portion disposed within the balloon opening,
the other end portion of said tube coaxially surrounding said shaft head end portion in airtight relation when said balloon is inflated; and,
trigger means for moving said shaft head end portion into said body.

4,134,229

ILLUMINATED FLYING SAUCER TOY

James A. Lehman, El Cajon, Calif., assignor to Warner-Lehman Corporation, El Cajon, Calif.

Filed Dec. 30, 1976, Ser. No. 755,841
Int. Cl.[2] A63H 33/28; A63B 65/10
U.S. Cl. 46—228 4 Claims



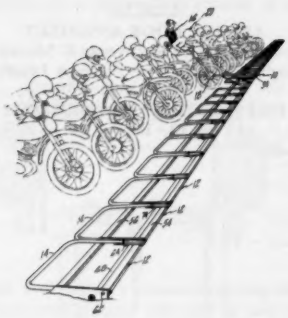
1. An illuminated hand-tossed flying saucer toy comprising:
a saucer shaped body;
an illumination plant centrally mounted to the underside of said body, said illumination plant comprising battery means, lamp means, clamp means spanning the length of said battery means, said clamp means has physical contact with one end of said battery means and includes a socket at its other end for holding said lamp means in physical contact with said battery means causing said lamp to illuminate, said illumination plant further includes a light-transmitting cover for enclosing said illumination plant;
said body has a downcurved peripheral lip to provide for gripping and lift, and said illumination plant extends below said lip to provide said flying saucer toy with increased airborn stability and to support said toy asymmetrically on the ground to facilitate quick pickups during play.

4,134,230

MOTORCYCLE RACING STARTING GATE

Richard M. Roy, 31 Old Common Rd., Wethersfield, Conn. 06109

Filed Apr. 4, 1977, Ser. No. 784,168
Int. Cl.[2] E01F 13/00
U.S. Cl. 49—49 10 Claims



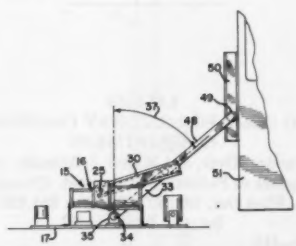
1. A starting gate for motorcycle racing including an actuator frame having a first pivoted member with notching means at one end and an arm at another end, first rotatable shaft means within said frame having camming means adapted to cooperate with said notching means, said rotatable shaft means having means for manually rotating said shaft, and one or more gate frame assemblies operatively connected with said actuator frame, each gate frame assembly including one or more members defining a racing stall, each of said stall defining members being pivotably mounted within said gate frame assembly, second rotatable shaft means within said gate frame assembly operatively connected to said first rotatable shaft means, and cam means on said second rotatable shaft, said cam means acting to establish the position of said stall defining members in a pre-start and a start position.

4,134,231

MODULATED OUTPUT FORCE DOOR OPERATOR

Kristupas Daugirdas, Wilmette, and Samir Elguindy, Bensenville, both of Ill., assignors to Vapor Corporation, Chicago, Ill.

Filed May 9, 1977, Ser. No. 794,842
Int. Cl.[2] E05F 15/06
U.S. Cl. 49—139 13 Claims



1. In a door operator for driving a door between open and closed positions, which operator includes a pneumatic differential engine having an output shaft, the improvement in means connected to the output shaft to modulate the driving force applied to the door which comprises, a slide bar directly secured to and oscillatable with the output shaft, and a multiply-

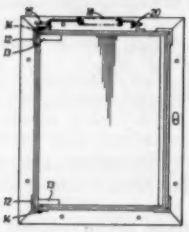
ing lever pivotally mounted at one end on an axis parallel to the output shaft axis and having a roller at the other end engaging in said slide, said lever being adapted to be connected to said door.

4,134,232

ANIMAL DOOR ASSEMBLY

Leonard P. Dodge, Romford, and Wendy E. Morley, Brentwood, both of England, assignors to Petdoors Limited, Romford, England

Filed Sep. 12, 1977, Ser. No. 832,621
Int. Cl.[2] E05F *1/10*
U.S. Cl. 49—386 **17 Claims**



1. An animal door assembly comprising a frame, a door mounted in the frame hinge means secured to the frame and to the door which hinge means has a hinge axis arranged to permit opening of the door in both directions to each side of the doorway and resilient means coupled with an edge of the door and acting between a position on the frame disposed inwardly of the door opening away from the hinge axis and a position fixed in relation to the door and offset radially from the hinge axis which position is so arranged as to adapt the assembly to induce resilient deformation of said resilient means during opening movement of the door and to induce a reduction in the rate of deformation with movement of the door as it approaches the open position the resilient means being effective to urge the door towards the closed position when opened in either direction.

4,134,233

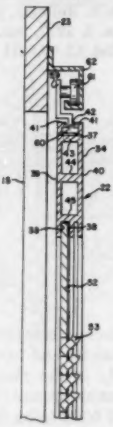
SLIDING DOOR FOR RAILWAY PASSENGER CAR COMPARTMENT

Jack E. Gutridge, Dyer, and Walter J. Marulic, Gary, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Dec. 19, 1977, Ser. No. 861,920
Int. Cl.[2] E05D *13/02*
U.S. Cl. 49—411 **13 Claims**

1. A door frame structure for a railway passenger car having interconnected upper and lower and vertical end members of identical design each comprising front and rear side walls and internally extending outer, intermediate and inner transverse walls integrally interconnecting said side walls and defining a pair of side by side arranged hollow box sections,

each of said side walls having outer edge portions in spaced relation which define a T-shaped recess including an access slot for admitting in the upper and lower members



associated guides and in the end members complimentary-shaped nose strips.

4,134,234

WEATHER STRIP AND BALANCE ASSEMBLY FOR NONREMOVABLE WINDOWS

Edward H. Wood, Sanford, N.C., assignor to Celotex Corporation, Tampa, Fla.

Filed Feb. 2, 1978, Ser. No. 874,412
Int. Cl.[2] E05D *13/10*
U.S. Cl. 49—429 **16 Claims**

1. A weather strip and balance assembly for a nonremovable window having a window frame with side jambs and at least one sash positioned in the frame on said side jambs; comprising:

(a) a pair of side jamb liners adapted to mount a sash on the side jambs of the window frame, said side jamb liners each being formed of a weather strip and a balance assembly mounted thereon;

(b) said weather strip being formed of a piece of flexible material of a length and width dimension to fit the jamb and having a pair of spaced outwardly extending ridges with a recessed center portion therebetween extending the full length of the same and with the weather strip being bowed outwardly along its width to slidably mount and seal to the sides of a sash at the ridges of the weather strip;

(c) the balance assembly for each jamb liner being formed of a spring positioned in one of the ridges and secured at one end to the ridge with a first pulley secured to said one ridge at its opposite end, a second pulley mounted on an end of the spring in said ridge remote from said one end, and a sash cord secured to the weather strip in said one ridge and directed over and between said pulleys;

(d) a slot in said one ridge of the weather strip intermediate the length of the same receiving and guiding the end of the sash cord from within said ridge to permit connection to a sash positioned on the surface of the ridge;

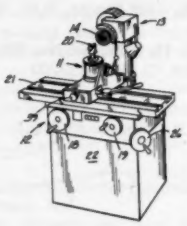
(e) and means connected to the free end of the sash cord outside of the ridge for connecting the sash cord to a sash positioned on the ridge.

4,134,235

ONE CHUCK GRINDING APPARATUS FOR END MILLING CUTTERS AND THE LIKE

Steve Maharidge, 14410 Ridge Rd., North Royalton, Ohio 44133

Filed May 18, 1877, Ser. No. 798,245
Int. Cl.[2] B24B *3/04*
U.S. Cl. 51—92 ND **3 Claims**



1. Apparatus for sharpening the cutting teeth of an end mill and cutting a gash between successive teeth comprising a grinding fixture in which said end mill is removably mounted, and, a grinder having a longitudinally and horizontally adjustable worktable on which said grinding fixture is demountably disposed, and, a plain grinding wheel mounted for rotation about a horizontal axis above said worktable and vertically adjustable relative thereto, said wheel having a periphery the thickness of which is no greater than the width of said gash, said grinding fixture comprising: (a) a base member; (b) a carriage reciprocably mounted on said base member; (c) means to reciprocate said carriage linearly along the horizontal axis toward and away from said wheel; and (d) a generally vertically disposed workhead rotatably mounted on said carriage for rotation about a longitudinal axis only, said workhead in which said end mill is axially held including (i) a barrel member, (ii) a sleeve member and cooperating index plate means, said sleeve member being rotatably disposed within said barrel member, said index plate having spaced peripheral serrations the number of which is a multiple of the number of said teeth to be sharpened, and (iii) detent means operable to hold said index plate in a position to sharpen said each tooth and gash said end mill so that said teeth are sharpened and said end mill is gashed without removing said end mill from said workhead or changing said wheel.

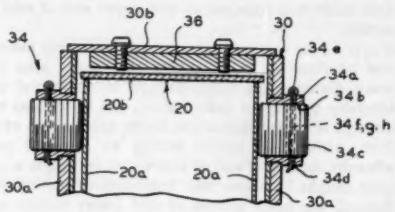
4,134,236

SIDE SHOE ASSEMBLY FOR A CRANE BOOM

Edward R. Ott, Plainfield, Ill., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Nov. 26, 1976, Ser. No. 744,908
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—118 **3 Claims**

1. In a crane boom assembly having a plurality of extensible and retractable boom sections telescopically nested one within the other, each boom section comprising a top wall, a bottom wall and connecting side walls therebetween, a plurality of adjustable side shoe assemblies provided between adjacent boom sections for maintaining alignment of the boom assembly as it is extended and retracted, certain of said side shoe assemblies being mounted on the side walls of an intermediate boom section at the forward end thereof and adjustable inwardly to engage the respective side walls of the next adjacent inner boom section, and certain of said side shoe assemblies being also mounted on the side walls of said intermediate boom section at the rear end thereof and adjustable outwardly to engage the respective side walls of the next adjacent outer boom section, each of said forward side shoe assemblies comprising an outwardly extending boss secured on an intermediate boom side wall having a threaded opening therein, and a threaded adjustment member received in said opening and adjustable to maintain engagement with the side wall of the next adjacent inner boom section, each of said rear side shoe assemblies comprising an inwardly projecting boss on an intermediate boom side wall having a threaded opening therein and a threaded adjustment member received in said opening and adjustable to maintain engagement with the side wall of the next adjacent outer boom section, said side shoe assemblies being periodically adjustable against the respective inner and outer adjacent boom sections to maintain alignment without disassembly of the boom assembly.

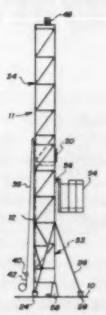


4,134,237

MODULAR SECTION MAST

James E. Armstrong, Crosby, Tex., assignor to Pool Company, Dallas, Tex.

Continuation-in-part of Ser. No. 710,386, Aug. 2, 1976, abandoned, which is a continuation of Ser. No. 557,824, Mar. 12, 1975, abandoned, and Ser. No. 431,571, Jan. 7, 1974, abandoned.
This application Jul. 18, 1977, Ser. No. 816,675
Int. Cl.[2] E04H *12/34*
U.S. Cl. 52—118 **15 Claims**



2. An oil well drilling and workover mast for erection on a substructure at remote sites, the mast having an open side along the lower section and being open on the same side at least a portion of the intermediate sections whereby pipe and drilling equipment may be moved within the mast comprising:

separate upper, intermediate and lower mast sections;

said lower mast section having three truss sides and an open side, said open side open along the entire length of said lower mast section whereby pipe and drilling equipment longer than said lower section can be moved within said section over a well or away from a well in vertical position;

said intermediate mast section having its lower end fastened to the upper end of said lower mast section and being dimensioned small enough in horizontal section whereby said intermediate mast section can be moved to pass through the open side of said lower section and extended from within said lower section to raise the intermediate section to a level such that said lower end of said intermediate section is adjacent to said upper end of said lower section;

said upper mast section resting on and releasably fastened to said intermediate mast section, said upper mast section being dimensioned small enough in horizontal section whereby said upper mast section can be moved to pass through the open side of the lower section and extended from within said lower section to a raised position whereby the lower end of said upper section is at a sufficient height to allow said intermediate section to pass through the open section of said lower section and be positioned under said upper section and fastened to said upper section;

raising means for telescoping said upper mast section from within said lower mast section in a vertical direction and then telescoping said intermediate section with said upper section fastened thereto from within said lower mast section; and

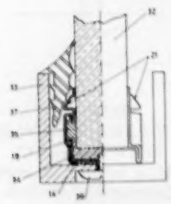
retaining means removably attached to said lower mast section to extend into said open side of said lower mast section for guiding said upper and intermediate mast sections as they are being telescoped from said lower section, said retaining means being attached to said lower mast section to extend into said open side of said lower mast section a distance sufficient to engage said upper and intermediate mast sections as they are telescoped, said retaining means having a limited extension into said open side to provide clearance for pipe and drilling equipment to be moved within the mast over the well in vertical position after assembly of said sections.

4,134,238

ASSEMBLY OF SHAPED LEAVES

Robert H. Auger, Le Vesinet, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Filed Jun. 22, 1977, Ser. No. 809,017
Claims priority, application France, Jun. 24, 1976, 76 19189
Int. Cl.[2] E02D *35/00*; E04C *2/38*
U.S. Cl. 52—127 **14 Claims**



1. A panel adapted for windows or doors comprising:

(a) a supported element including at least one sheet material member; and,

(b) means for supporting said supported element, said supporting means including

(1) a plurality of riders having a base portion and a pair of wing portions extending from an edge normal thereto, and each said rider disposed at spaced locations around said supported element with said base portion located in opposed relation to the side of said supported element and each said wing portion placed in projection to and slightly spaced from and disposed exteriorly of a respective outside face of said supported element,

(2) attachment means carried by each said base adapted for removable attachment of a frame,

(3) securing means comprising a layer of adhesive disposed over an area substantially equal to the area of each said wing portion of said riders having a capability of providing an elastic bond between said wing portions and said faces of said supported element, and

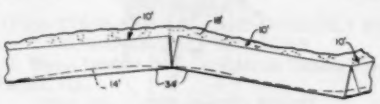
(4) a frame supported by said attachment means to circumscribe said supported element.

4,134,239

BURIAL FIELD AND METHOD OF CONSTRUCTING SAME

Tulio E. Obonaga-Calle, 1426 21st St., N.W., Washington, D.C. 20036

Filed Apr. 19, 1977, Ser. No. 788,997
Int. Cl.[2] E04H *13/00*
U.S. Cl. 52—133 **15 Claims**



1. The method of constructing a burial field which elevates the original ground surface while following the topography thereof and is characterized by efficient use of space, which comprises the steps of:

(a) removing the sod from a predetermined undulating area of the ground surface to present a stripped area which essentially follows the contour of the original ground surface;

(b) forming a water impermeable floor slab on said stripped area substantially at the original ground surface to provide an undulating floor slab essentially following the contour of the original ground surface, said floor slab having drainage pitch to create a natural water run-off;

(c) subdividing the area of said slab into a plurality of side-by-side casket receiving chambers by placing on said slab a first plurality of interfitting wall sections which define the boundaries of said chambers, and then stacking a second plurality of interfitting wall sections on said first plurality of wall sections whereby to provide at least two tiers of casket-receiving chambers;

(d) covering the upper tier of chambers by placing separate covers over each stack of chambers, whereby the entirety of said predetermined area presents multiple tiers of potential burial plots, with said two tiers and said covers being located above the original ground surface;

(e) covering those portions of the burial field which are disposed above the original ground surface with soil so that the whole of said area is returned to natural state following the undulations of the original ground surface but with increased elevation, and then covering said area with sod to complete the natural appearance of said area; and then

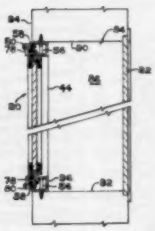
(f) temporarily removing individual covers together with their sod to permit placement of a casket in an available site within a given plot, and then replacing said cover with its covering sod.

4,134,240

MOUNTING SYSTEM FOR AN ADD ON GLASS PANEL

John P. Bologna, Leechburg, and Richard R. Lewchuk, Allison Park, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 686,847, May 17, 1976. This application Aug. 1, 1977, Ser. No. 841,162
Int. Cl.[2] E06B 3/26
U.S. Cl. 52—202 7 Claims



1. A system for mounting a sheet in spaced relation to an existing glazing to convert the existing glazing into an acoustical glazing, the existing glazing having a pane mounted in a frame with the frame mounted in a building wall structure, comprising:

an abutment secured on the building wall structure in spaced relation to the existing glazing, said abutment having a sheet receiving surface in spaced relation to the existing glazing;

a sheet;

means for securing said sheet to said sheet receiving surface of said abutment; and

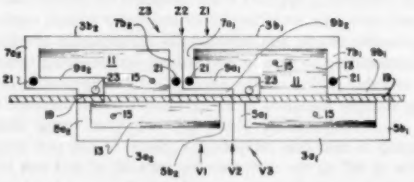
means mounted between said sheet and the building wall structure having said abutment for isolating said sheet from structural vibrations.

4,134,241

INSULATED BUILDING BLOCK

Robert J. Walton, Scottsdale, Ariz., assignor to Energy Block Ltd., Scottsdale, Ariz.

Filed Jul. 7, 1977, Ser. No. 813,736
Int. Cl.[2] E04B 2/00, 5/04
U.S. Cl. 52—275 23 Claims



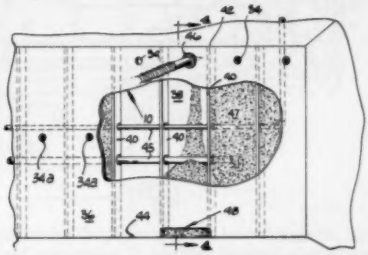
1. A building block comprising a walled shell of finite thickness thereby defining a continuous cavity therewithin, the inner surface of said walled shell including a continuum of at least eight sides, two of said sides comprising a pair of laterally spaced opposing faces offset longitudinally one from the other, four of said sides comprising 2 pairs of adjacent ends connected to the 4 extremities of said faces, and two of said sides forming a joinder connecting each pair of adjacent ends, the outer surface of said walled shell including at least eight sides adjacent to and extending in substantially the same direction as their respective inner sides thereby to form a hollow block in which the continuous cavity and outer surface are of a generally offset shape, the amount of offset and thickness of the walls being such that when the cavity is filled with insulation and an offset end is matingly abutted with the offset end of a similar block, the structure so formed will have an overlapping cavity arrangement such that any straight vector heat flow striking the structure will always meet insulation regardless of what point on the structure the vector seeks to go through in a straight line.

4,134,242

METHOD OF PROVIDING THERMAL INSULATION AND PRODUCT THEREFOR

Andrew Musz; John A. Hoehler, both of Littleton; Susan F. Hilt, and William H. Kielmeyer, both of Englewood, all of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Sep. 1, 1977, Ser. No. 829,693
Int. Cl.[2] E04B 1/76; F16L 59/00
U.S. Cl. 52—309.1 31 Claims



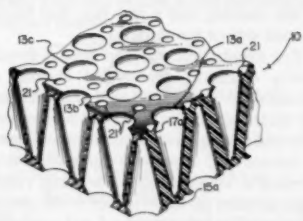
1. A dry free flowing thermal insulation suitable for installation by auger feeding, pouring, blowing or other similar means comprising a dry, free flowing mixture comprising a major amount of granular thermal insulating material mixed with a minor amount of fibrous thermal insulating material.

4,134,243

STRUCTURAL PANELS

Donald J. Fries, 4513 Travis, Dallas, Tex. 75205

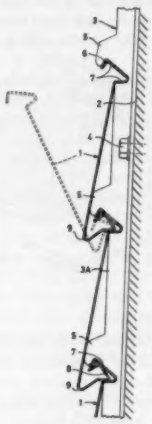
Filed Aug. 25, 1977, Ser. No. 827,665
Int. Cl.[2] E04C 2/10; B29C 17/02; B32B 3/12
U.S. Cl. 52—596 9 Claims



1. A panel structure having a first planar face surface and a second planar face surface and a plurality of tapered walled cells lying intermediate and supporting said first planar face surface and said second planar face surface, said tapered walled cells opening outwardly from at least one of said first planar face surface and said second planar face surface at one end of each of said tapered walled cells and each of said tapered walled cells terminating at an apex at the other end of each of said tapered walled cells with the cross-sectional areas of each of said tapered walled cells being defined by a continuous substantially curvilinear wall, said continuous curvilinear wall tapering upwardly and outwardly from said apex along the axis of said tapered walled cell to a point of maximum cross-sectional area and then said cross-sectional area of said tapered wall cells decreasing substantially from said maximum cross-sectional area to an opening having a cross-sectional area substantially smaller than said maximum cross-sectional area adjacent the planar face surfaces opposite said apex, thereby

forming a continuous shoulder adjacent said opening of said tapered walled cell.

4,134,244
CLADDING
Carl J. O. Sjölander, Köping, Sweden, assignor to A-Betong Aktiebolag, Vaxjo, Sweden
Filed Aug. 31, 1977, Ser. No. 829,370
Claims priority, application Sweden, Sep. 20, 1976, 7610381
Int. Cl.[2] E04D 1/50
U.S. Cl. 52—763 5 Claims



1. A cladding for an exterior wall or a roof of a building and having a weather-exposed external side and an internal side, said cladding comprising, in combination:

(A) a plurality of elongate panels, of which adjacent ones overlap in the direction of their widths, each of said panels having

(a) a front face that is partly exposed on the external side of the cladding and a rear face that forms part of the internal side of the cladding,

(b) a first longitudinal marginal portion forming a longitudinally extending thin-walled channel of resiliently deformable cross section, said channel opening towards the front face of the panel and having side wall members converging towards the channel opening, and

(c) a second and opposite longitudinal marginal portion forming a longitudinally extending ridge-like attachment member on the rear face of the panel, said attachment member being received and retained in said channel of a next adjacent panel in a hook-in-hook-like manner, and

(B) a plurality of supporting rails extending in spaced relationship over the wall or roof to be covered in a direction intersecting the longitudinal directions of said panels,

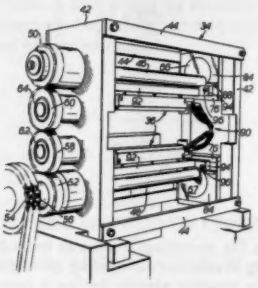
(a) each of said rails having, at intervals corresponding to the exposed widths of said panels, fastener means thereon for the attachment of said panels,

(b) each of said fastener means comprising an incut with a constricted opening formed in a longitudinally extending, flange-like and rigid projection on the rail, and

(c) each such incut having a size and shape to permit said channel formed by said first longitudinal marginal portion of a related one of said panels to enter the incut while having its cross sectional configuration resiliently deformed and to almost recover its original cross sectional configuration when entered,

(C) said panels having their channels snapped into the incuts of at least two rails each so as to be firmly retained.

4,134,245
PACKAGING MACHINE
Ejidio Stella, Vicenze, Italy, assignor to FMC Corporation, San Jose, Calif.
Filed Feb. 8, 1977, Ser. No. 766,644
Int. Cl.[2] B65B 9/06, 51/14, 61/14
U.S. Cl. 53—547 3 Claims



1. In a horizontal form, fill and seal packaging machine comprising an article infeed conveyor provided with equally spaced article feeding lugs, a frame rotatably supporting at least one roll of thermoplastic web material, means for forming the web into a tube as the web is unwound from said roll, said infeed conveyor being operative to introduce said articles in the web tube in spaced relation to create unoccupied web portions, means, simultaneously engaging opposite sides of said web tube at said unoccupied portions, for transversely severing and sealing each article in a web tube portion; said sealing and severing means including oppositely rotating transverse shafts located above and below the path of the web tube; means for synchronously rotating said shafts; means for mounting said sealing and severing means and responsive to the rotation of said shafts for continuously and concurrently moving said sealing and severing means along circular paths while the orientation thereof is maintained constant, said mounting means comprising opposed frame members on opposite sides of the web tube path, including upper and lower paired, vertically reciprocable blocks and horizontally reciprocable blocks, for accommodating motion of said sealing and severing means in said circular paths; one of each pair of reciprocable blocks being slidably mounted in an associated frame member with the other reciprocable block of each pair being slidably mounted in said one reciprocable block of the pair and for motion at 90° to the reciprocating motion of said one block, said transverse shafts being provided with eccentrics rotatably received by said other reciprocable block of each pair, said sealing and severing means being mounted to said other reciprocable block of each pair whereupon, in response to the rotation of said transverse shafts, said blocks are continuously and concurrently reciprocated in their respective vertical and horizontal directions, to describe said circular paths; and means resiliently mounting said sealing severing means; the radius of said circular paths being of a length so that they intersect as said sealing and severing means approach and recede from the web tube; said resilient means being operative, on initial pressure engagement with the opposite sides of said web tube, to constrain the sealing and severing means to describe a linear path between the points at which said circular paths intersect and thus effect prolongation of the time in which said sealing and severing means maintain engagement with the web tube.

4,134,246

APPARATUS FOR WRAPPING WITH STRETCH FILM

Charles E. Michels, Racine, Wis., assignor to Reliance Electric Company, Cleveland, Ohio

Filed Apr. 6, 1977, Ser. No. 785,137
Int. Cl.[2] B65B 11/12
U.S. Cl. 53—228 7 Claims

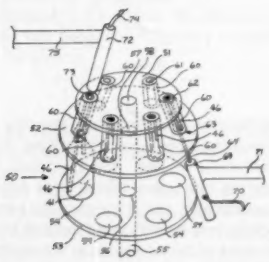
1. Apparatus for wrapping an article with stretch film and comprising means for partially wrapping said film about the article with film wings having upper and lower plies extending laterally from both sides of the article, means for advancing the partially wrapped article to a stationary stretch station, clamping means at said stationary station for positively clamping both plies of said wings, means for moving said clamping means laterally away from the article whereby to stretch both plies of said film wings, folding means for concurrently lifting the article and advancing the clamping means beneath the lifted article with the rate of lifting of the article corresponding in such a manner to the rate of movement of the clamping means so that the folding is accomplished without loss of film tension and thereby folding said wings at least partially against said article while maintaining stretching tension in said film and means for completing the wrapping of said wings against said article.

4,134,247

METHOD AND APPARATUS FOR PROVIDING CONTAINERS WITH STRAWS

Kenneth E. Sather, 990 Sonora Dr., Reno, Nev. 89502

Filed Feb. 19, 1975, Ser. No. 550,992
Int. Cl.[2] B65B 3/00
U.S. Cl. 53—281 2 Claims



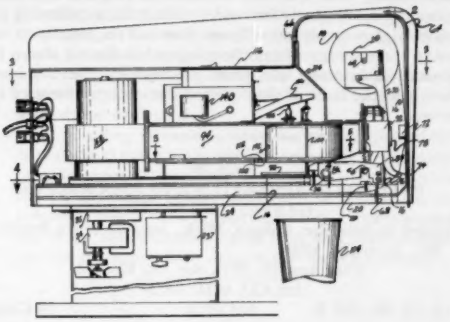
1. Apparatus for inserting a straw in a container comprising means to fold a straw comprising a flexible section with one elongated relatively rigid end and one relatively shorter relatively rigid end into a container comprising means to hold a straw; means to place said straw with its flexible portion in position to be received by the holder; means to insert said straw into said holder folded about the flexible portion so that the two relatively rigid ends are essentially parallel; means to align the straw holder with the opening of the container; means to eject the straw from the straw holder into said container; means cooperative with said means to eject and said means to hold the straw to spread said straw in such manner that the longer relatively rigid end is forced into contact with the lower end inner portion of the container and the shorter relatively rigid portion is forced into contact with another inner portion of the container.

4,134,248

CONTAINER CAPPING APPARATUS AND METHOD THEREFOR

Warren R. Freeman, Wayzata, Minn., assignor to Kup Kap, Inc., Minneapolis, Minn.

Filed May 10, 1976, Ser. No. 684,879
Int. Cl.[2] B67B 5/00; B65B 7/28
U.S. Cl. 53—298 7 Claims



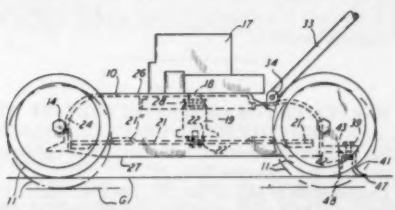
1. An apparatus for the placement of a heat-shrinkable cover on a container comprising a support housing containing a heat-shrinkable film supply, film transport means comprised of film conveying, severing and holding means, said film conveying means being mounted for reciprical movement on scotch yoke crank arm means powered by electrical motor means, film heat-shrinking means comprised of heater and blower means, and electrical actuating means comprised of movable bonnet means, said film transport means comprising means for withdrawing a predetermined length of film from said film supply and film severing means, means for holding said severed film in operational alignment with said film-shrinking means by movement of a container to be covered vertically against said held film to contact and move said movable bonnet means, the movement of said bonnet means electrically actuating said blower and heater means, and the subsequent movement of said container away from said bonnet means initiating a recycle of said film transport means.

4,134,249

MULCHING TYPE OF LAWN MOWER

Charles A. Wuerker; Gary C. Steingraber, and Neill C. Woelffer, all of Racine, Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed Feb. 25, 1977, Ser. No. 771,928
Int. Cl.[2] A01D 55/18
U.S. Cl. 56—255 9 Claims



1. A mulching type of lawn mower comprising a mower housing having an endless skirt extending therearound and toward the ground and terminating in a lower endless edge on substantially a horizontal plane, wheels on said housing for supporting said housing in a fore-and-aft axis of mower movement, a grass cutter rotatably mounted on said housing and disposed within the confines of said endless skirt and at a level above that of said lower edge for cutting the grass clippings in

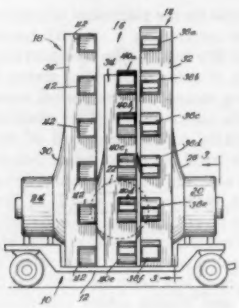
a swath of a width defined by said cutter in the fore-and-aft movement of said housing, said cutter having pitched portions for blowing said clippings downwardly and into the turf, a prime mover on said housing for rotating said cutter and to thereby cut the grass located within the confines of said skirt, and a panel rigidly affixed to said housing and extending thereacross and in an upright plane for the width of said swath in the direction transverse to said fore-and-aft axis and at the rear of said housing relative to said fore-and-aft axis, and said panel extending downwardly from said housing and terminating in a lower edge at an elevation lower than and rearwardly of said lower endless edge of said housing and is spaced above the ground for brushing said grass clippings and thereby brush them into the lawn in the forward cutting movement of the mower.

4,134,250

PNEUMATIC APPARATUS AND PROCESS FOR HARVESTING FRUIT

Edward D. Scheffler, Coloma, Mich., assignor to Ag Superior, Inc., Riverside, Mich.

Filed Aug. 15, 1977, Ser. No. 824,712
Int. Cl.[2] A01D *46/24*
U.S. Cl. 56—328 R **30 Claims**



1. Apparatus for harvesting fruit from trees comprising first air blast-producing means for causing a blast of air to impinge on at least one fruit-laden limb grouping in a direction to bend said limb grouping, stopping means for stopping said blast of air from impinging on the bent-limb grouping sufficiently that at least one bent limb is free to rebound, a second air blast-producing means for causing a second blast of air to impinge on said bent-limb grouping from the opposite direction, and timing means for causing said second blast of air to impinge on said bent-limb grouping while it is still bent as a result of the first blast of air having impinged thereon, whereby the tendency to rebound of any bent limb in said grouping which is free to rebound is augmented by said second blast of air from the opposite direction.

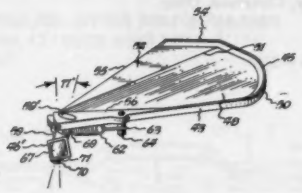
4,134,251

HARVESTER FOR GRAPES OR THE LIKE WITH IMPROVED COLLECTOR LEAF CONSTRUCTION

Charles G. Burton, Lewiston, N.Y., assignor to Chisholm-Ryder Company, Inc., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 654,634, Feb. 2, 1976, abandoned. This application Jul. 7, 1976, Ser. No. 703,181
Int. Cl.[2] A01D *46/00*
U.S. Cl. 56—330 **36 Claims**

1. A harvester for harvesting produce from plants such as grapevines or the like comprising a frame, produce harvesting means on said frame, collector leaf means on said frame, a surface on said collector leaf means for catching produce harvested from said plants by said harvesting means, and produce-lifting leaf means including a second surface located forwardly of said collector leaf means and below said surface of said collector leaf means, said second surface being disposed



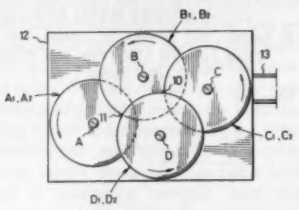
forwardly at a steeper angle to the horizontal than the surface of said collector leaf means for lifting produce which would normally pass below said surface up onto said surface.

4,134,252

METHOD AND APPARATUS FOR PREPARING FALSE TWISTED YARNS

Yukio Otaki; Ken-ichiro Oka; Kazuyoshi Koide, and Kiyoshi Nakagawa, all of Mishima, Japan, assignors to Toray Industries Inc., Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,539
Claims priority, application Japan, Apr. 10, 1976, 51-40482
Int. Cl.[2] D02G *1/08*
U.S. Cl. 57—284 **14 Claims**



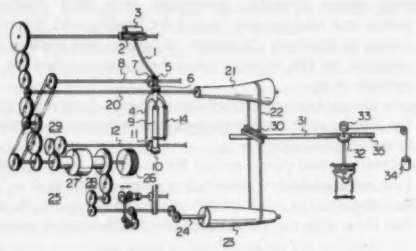
1. A method for simultaneously false twisting two yarns by using a false twisting apparatus comprising four rotational shafts, each including at least one frictional disc mounted thereon, and having two points where three discs overlap one another ichnographically, and contacting the two yarns at said overlapping points, respectively, said method comprising performing said contact of the two yarns at the overlapping points so that an angle defined by the rotational direction of the discs and the direction of advance of the yarn is an acute angle at each contact point, and winding the resulting false twisted yarns.

12. An apparatus for simultaneously false twisting two yarns, which comprises four rotational shafts, each of which has at least one frictional disc mounted thereon, said four shafts being disposed so that they form four apexes of a quadrilateral, respectively, wherein at least four frictional discs are attached stepwise in order from one shaft located at a lowermost position to adjacent shafts clockwise or counterclockwise so that the discs in every two adjacent shafts overlap each another, and the frictional discs attached to a set of two shafts located on one of the two diagonal lines of said quadrilateral overlap each other but the frictional discs attached to another set of the two shafts located on the other diagonal line do not overlap each other.

4,134,253
METHOD AND APPARATUS FOR WINDING ROVING WITH CONSTANT TENSION ON BOBBIN ON BOBBIN-LEAD TYPE ROVING FRAME

Kiyoyasu Handa, Nagoya, and Hiroaki Yuzuriha, Takarazuka, both of Japan, assignors to Aichi Spinning Co., Ltd., Aichi, Japan

Filed Mar. 16, 1978, Ser. No. 887,118
Claims priority, application Japan, Apr. 1, 1977, 52-036066
Int. Cl.[2] D01H *1/26*
U.S. Cl. 57—96 **22 Claims**



1. A method for winding a roving onto a bobbin with a constant tension in a bobbin-lead type roving frame, which comprises a drafting assembly used for attenuating a fed sliver into a thinner roving, a flyer for producing a predetermined number of twists on said roving, a bobbin rotating at a variable speed by means of a variable speed bobbin drive mechanism, characterized by the steps of:

applying external forces vertically onto said roving running from the nip of the front rollers to the top of said flyer so that said roving can be vibrated at a frequency corresponding to the roving tension;

measuring said vibration frequency with a measuring device, while said roving is vibrating without touching said measuring device,

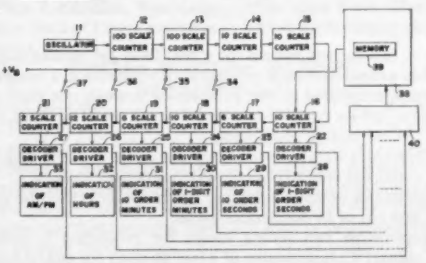
comparing said measured vibration frequency with a predetermined frequency value; and

adjusting the speed of a bobbin by using said comparison results until said measured frequency is equal to the predetermined frequency.

4,134,254
ELECTRONIC TIMEPIECE DEVICE

Tohru Yasukura, Kunitachi, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Dec. 16, 1975, Ser. No. 641,308
Claims priority, application Japan, Dec. 17, 1974, 49-144708
Int. Cl.[2] G04C *3/00*; G04B *19/30, 27/00*
U.S. Cl. 58—85.5 **8 Claims**



1. An electronic timepiece device comprising:

a plurality of coupled counter circuits for carrying out a successive frequency division of signals issued from the frequency oscillator and counting the frequency-divided signals as time-indicating signals;

a specified time detecting circuit for generating a signal indicating the detection of that specified point of time counted by the plural counter circuits during every n hours, where n denotes an integer larger than 1, at which correction should be made;

memory means for storing a correction base value corresponding to that time error resulting from a frequency oscillating deviation originally accompanying the frequency oscillator which occurs during n hours;

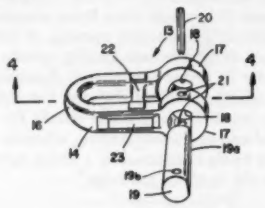
control signal generating means for producing a binary control signal by designating whether said time error is a gain or loss of time; and

count-controlling means connected between a selected two of said plural counter circuits for controlling, upon receipt of a detection output from the specified time-detecting circuit, the pulses causing advancing of counting in the preceding one of the selected two counter circuits according to the binary control signal from said control means and the correction base value in said memory means.

4,134,255
DRAG CHAIN

Robert T. McBain, Brush Prairie, Wash., and Bruce C. Johnson, Portland, Oreg., assignors to Columbia Steel Casting Co., Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 771,555, Feb. 24, 1977, Pat. No. 4,060,978. This application Nov. 22, 1977, Ser. No. 854,009
Int. Cl.[2] F16G *13/18*
U.S. Cl. 59—78 **17 Claims**



1. A chain including a plurality of serially connected links, each link comprising a yoke shaped body having a juncture at one end defining an open area, a pair of spaced apart lugs at the other end forming an open end, each lug having a pin eye, the pin eyes being aligned with one another and each including a flat surface oriented toward said other end of the link, and a link pin shaped complementarily to the pin eyes, with a flat surface on one side and of a length to extend into both pin eyes, with link pin retaining means comprising means connecting the link pin with one of the lugs when the pin is assembled in the eyes, said links being interconnected with the pin of each link passing through said juncture end open area of the next succeeding link.

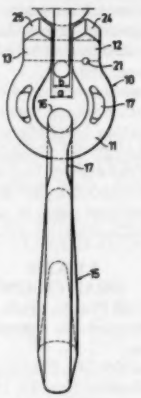
4,134,256
COUPLING UNIT

Lars O. A. Fredriksson, Vaxjo, Sweden, assignor to K A Bergs Smide AB, Gemla, Sweden

Filed Mar. 14, 1977, Ser. No. 777,020
Claims priority, application Sweden, Mar. 19, 1976, 76030675
Int. Cl.[2] F16G *15/04*
U.S. Cl. 59—93 **6 Claims**

1. A coupling unit for coupling to the end link of a chain, said end link having an interior opening, said coupling unit comprising in combination a substantially U-shaped, substantially flat shackle for coupling to said chain end link through said interior opening, said shackle having two opposed spaced apart shanks provided with registered apertures near their free ends, and a removable locking spindle extending through said

apertures in said shanks for coupling them together; an eye member having an at least substantially closed eye having a cross dimension with a major portion of cross dimension greater than the distance between said shanks and a minor flattened portion which is smaller than the distance between said shanks, whereby the flattened portion, subsequent to the removal of the locking spindle of said shackle, may be introduced between the shanks substantially beyond their apertures, the opening of the eye member being then threadable upon one



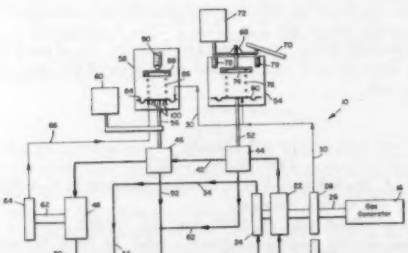
shackle shank for accomplishing coupling together of shackle and eye; an adjacent link in said chain being connected to said end link, the width of the interior opening of said end link being proportioned to receive said locking spindle with close clearance, whereby to define a minimum dimension for said end link, the cross dimensions of said end link being smaller than the distance between said shackle shanks for permitting connection of said end link therebetween, whereby to prevent said shackle from being connected to a chain having an end link that is either too small or too large.

4,134,257

GAS TURBINE FUEL DELIVERY AND CONTROL SYSTEM

James C. Riple, Culver City, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Nov. 3, 1976, Ser. No. 738,199
Int. Cl.[2] F02C *9/06, 9/08*
U.S. Cl. 60—39.03 **23 Claims**



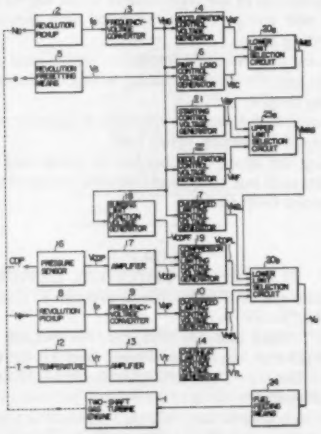
1. In combination:
an engine having a rotating member;
a source of fuel for producing rotation of said member;
fuel pump means for pumping fuel to said engine;
means for driving said fuel pump means to increase fuel flow with increase in speed of said rotating member;
speed signal generator means for generating a speed signal indicative of rotational speed of said rotating member;
settable means for indicating a desired rotational speed for said rotating member;
valve means interposed between said fuel pump means and said engine for returning a portion of said fuel to said source;
diaphragm means operably coupled with said valve means for controlling the return of fuel to said source;
spring means operably associated with said diaphragm means and said settable means for biasing said diaphragm means to decrease the return of fuel to said source, compression of the spring means being controlled by said settable means;
means for applying the speed signal to said diaphragm means for biasing said diaphragm means to increase the return of fuel to said source;
deceleration fuel pump means for pumping fuel to said engine independent of said fuel control means; and
means for driving said deceleration fuel pump to decrease fuel flow with decrease in speed of said rotating member.

4,134,258

FUEL CONTROL SYSTEM

Nobuhito Hobo, Inuyama; Takashi Hasegawa, Kariya; Yoshihiko Tsuzuki, Anjo, and Yutaka Suzuki, Nishio, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 581,698, May 28, 1975, abandoned.
This application Jan. 11, 1977, Ser. No. 758,486
Claims priority, application Japan, Jun. 10, 1974, 49-65785
Int. Cl.[2] F02C *7/26*
U.S. Cl. 60—39.14 **2 Claims**



1. A fuel control system for a two-shaft gas turbine engine used in a running vehicle and having a compressor, a compressor turbine coupled to said compressor through one shaft and a power turbine coupled to a load through the other shaft, said fuel control system comprising:
compressor turbine speed detecting means for detecting the rotational speed (NG) of said compressor turbine;
accelerator position detecting means for detecting the position (α) of an accelerator pedal;
acceleration fuel setting means for producing a voltage signal (V_{AF}) indicative of a fuel quantity for engine acceleration in response to the detection output of said compressor turbine detecting means;
part load fuel setting means for producing a voltage signal (V_{SC}) indicative of a fuel quantity for engine part load in response to the two detection outputs of said compressor

turbine speed detecting means and said accelerator position detecting means;

first selection means for selecting one of said voltage signals produced by said two setting means to produce a first selection voltage signal (V_{MIS}) indicative of a fuel quantity for engine acceleration and engine part load;

starting fuel setting means for producing a voltage signal (V_{SF}) indicative of a fuel quantity for engine start in response to the detection output of said compressor turbine speed detecting means;

deceleration fuel setting means for producing a voltage signal (V_{RF}) indicative of a fuel quantity for engine deceleration in response to the detection output of said compressor turbine speed detecting means;

second selection means for selecting one of said three voltage signals produced by said first selection means, said starting fuel setting means and deceleration fuel setting means to produce a second selection voltage signal (V_{MAS}) indicative of a fuel quantity for engine acceleration, engine part load, engine start and engine deceleration;

surge limit setting means for setting the surge limit of said compressor in response to the detection output of said compressor turbine speed detectiing means;

pressure detecting means for detecting the pressure in said compressor;

surging fuel limiting means for producing a voltage signal (V_{CDPL}) indicative of a minimum fuel quantity when the detection output of said pressure detecting means exceeds the surge limit output of said surge limit setting means;

compressor turbine overspeed limiting means for producing a voltage signal (V_{NGL}) indicative of a minimum fuel quantity when the detection output of said compressor turbine speed detecting means exceeds a predetermined speed limit;

power turbine speed detecting means for detecting the rotational speed (N_P) of said power turbine;

power turbine overspeed limiting means for producing a voltage signal (V_{NPL}) indicative of a minimum fuel quantity when the detection output of said power turbine speed detecting means exceeds a predetermined speed limit;

third selection means for selecting one of said voltage signals of said second selection means, surging fuel limiting means, compressor turbine overspeed limiting means and said power turbine overspeed limiting means, said third selection means producing a voltage signal corresponding to a minimum fuel quantity for limiting said overspeeds and said surge with priority over said second selection voltage signal when at least one of said voltage signals of said three limiting means is produced; and

fuel feed means for controlling fuel quantity for said gas turbine engine in response to said third selection voltage signal.

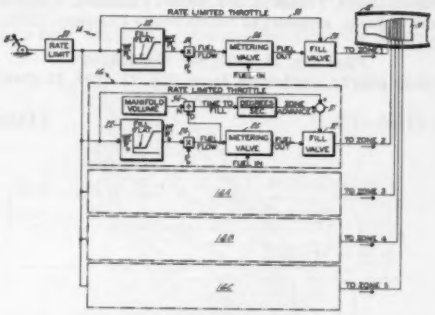
4,134,259

FUEL MANIFOLD PREFILL

William B. Gardner, West Simsbury, and John Kniat, Glastonbury, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 20, 1977, Ser. No. 799,013
Int. Cl.[2] F02K 3/10
U.S. Cl. 60—241 **4 Claims**

1. For a jet engine augmentor having a plurality of combustion zones and manifolds leading fuel to each of said combustion zones, a source of fuel and a fuel control having a fuel metering valve interconnecting each of said manifolds and said source of fuel, on-off valves disposed in fuel flow relation between said fuel metering valve and each of said manifolds, a pilot throttle lever, means responsive to the position of said pilot throttle lever capable of opening each of said on-off valves in ascending order upon a given time in anticipation of light-off in each of said combustion zones subsequent to the first one, said means including a rate limiter for limiting the signal emanating from movement of said throttle to a constant rate and means responsive to said constant rate for calculating the time to fill said manifold in the next ascending order to



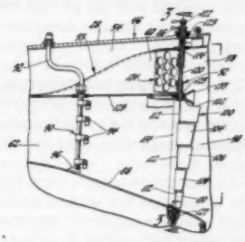
actuate said on-off valve in anticipation of light-off of that combustion zone whose manifold is being filled with fuel.

4,134,260

AFTERBURNER FLOW MIXING MEANS IN TURBOFAN JET ENGINE

Arthur H. Lefebvre, Lafayette; Samuel B. Reider, Indianapolis, and Jerry G. Tomlinson, Speedway, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 25, 1977, Ser. No. 845,423
Int. Cl.[2] F02K 3/10, 3/02
U.S. Cl. 60—261 **3 Claims**



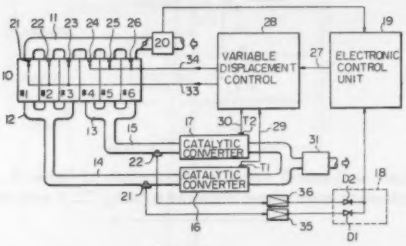
1. An afterburner assembly for a turbofan jet engine with a fan bypass and a core engine comprising an outer annular cold air duct having an inlet connected to the bypass fan discharge and an outlet, an internal core heat exhaust duct having an inlet in communication with the turbojet exhaust and an outlet, chute means forming a plurality of crossover passages communicating the core heat exhaust duct with the cold air duct outlet, means for directing fuel spray into said crossover passages to be vaporized by hot exhaust gas therein, a flameholder in the outlet of each chute means to maintain a flame front at the cold air duct outlet, a pair of perforated turbulator vanes in said outlet for creating turbulence and mixing cold air flow with the flame front at the cold air duct outlet, operator means connected to said turbulator vanes and operative to position said vanes against one another in a straight line position to prevent flow disturbance during normal operation and operative to position said turbulator vanes in a spread-wing position to produce maximized flow turbulence during afterburner operation, and a plurality of swirler vanes located within said internal core gas exhaust duct and connected to said operator means to be positioned to produce a combination translatory and swirl motion flow from said core heat exhaust duct, said swirler vanes being positioned against one another by said operator means in a straight line axial position to permit smooth exhaust flow from said exhaust duct during normal jet engine operation.

4,134,261

VARIABLE DISPLACEMENT CLOSED LOOP FUEL CONTROLLED INTERNAL COMBUSTION ENGINE

Haruhiko Iizuka, Yokosuka, and Noburu Fukasawa, Kamakura, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 15, 1977, Ser. No. 824,849
Claims priority, application Japan, Sep. 13, 1976, 51-108876
Int. Cl.[2] F01N 3/15
U.S. Cl. 60—276 6 Claims



1. A multi-cylinder internal combustion engine having first and second cylinders and first and second electrically energizable fuel injectors respectively for said cylinders adapted when energized to discharge fuel thereinto and an air intake passage for said cylinders, comprising:

first and second exhaust systems associated with said first and second cylinders respectively;

first and second means for respectively generating first and second signals indicative of the air fuel ratio within said first and second exhaust systems respectively;

first and second catalytic converters disposed in said first and second exhaust systems respectively, and effective when supplied with exhaust gases containing air and fuel in a certain ratio to accelerate simultaneously the oxidation of unburned fuel and the reduction of nitrogen oxides when said exhaust gases are within an effective range of temperatures;

first and second temperature sensors for detecting when said exhaust gases in said first and second catalytic converters are within said effective range of temperatures;

means operable when said engine is at light load to selectively energize one of said first and second fuel injectors in synchronism with operation of the engine in response to the time of occurrence of an output from said first and second temperature sensors and operable when said engine is at heavy load to simultaneously energize said first and second fuel injectors in synchronism with operation of the engine, and adjusting the period of energization of said fuel injectors in accordance with the one of said first and second signals which is indicative of the air-fuel ratio within one of the exhaust systems being richer than the air-fuel ratio within the other exhaust system, whereby the ratio of air and fuel supplied to said cylinders is varied in response to the direction of the deviation of said one of said first and second signals from a fixed reference so as to reduce the deviation of the ratio of air and fuel in the respective exhaust systems from said certain ratio.

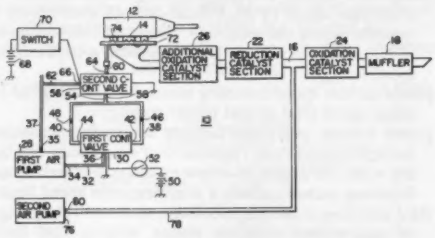
4,134,262

EXHAUST GAS CATALYTIC CONVERTER SYSTEM

Kunihiko Sugihara, Yokohama; Tadashi Nagai, Yokosuka, and Yoshifumi Hase, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Japan

Continuation of Ser. No. 519,286, Oct. 30, 1974, abandoned.
This application Sep. 20, 1976, Ser. No. 725,128
Int. Cl.[2] F02B 75/10; F01N 3/15
U.S. Cl. 60—289 9 Claims

1. A catalytic converter system for an internal combustion engine, comprising a reduction catalyst section containing a reduction catalyst therein and disposed in the flow of exhaust gas, discharged from an internal combustion engine, to catalytically reduce nitrogen oxides in said engine exhaust gas, an oxidation catalyst section containing an oxidation catalyst therein and disposed in said engine exhaust gas flow at a location downstream of said reduction catalyst section to catalytically oxidize hydrocarbons and carbon monoxide in said engine exhaust gas, an additional oxidation catalyst section containing an oxidation catalyst therein and disposed in said engine exhaust gas flow at a location upstream of said reduction catalyst section to catalytically oxidize a part of each of hydrocarbons and carbon monoxide in said engine exhaust gas to consume oxygen in said engine exhaust gas, an air pump discharging secondary air under pressure, passage means communicating with said air pump and with said engine exhaust gas flow at a location upstream of said additional oxidation catalyst section and feeding said secondary air from said air pump into said engine exhaust gas flow at the last-mentioned location, and control means controlling the amount of said secondary air fed through said passage means into said engine exhaust gas flow at said last-mentioned location in accordance with an operating condition of said engine to limit the oxygen content in said engine exhaust gas fed from said additional oxidation catalyst section to said reduction catalyst section to a value below a predetermined value and comprising valve means disposed in said passage means and controlling the same, and valve control

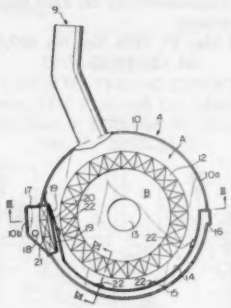


means controlling said valve means in accordance with an operating condition of said engine, in which said passage means comprises first and second parallel conduits communicating with said engine exhaust gas flow at said last-mentioned location and alternatively communicable with said air pump and formed therein with orifices, respectively, the cross sectional area of each of which being determined to limit the amount of said secondary air passing therethrough to said engine exhaust gas flow at said last-mentioned location to reduce the oxygen content in said engine exhaust gas fed from said additional oxidation catalyst section to said reduction catalyst section to a value below said predetermined value, the cross sectional area of said orifice of said first conduit being smaller than that of said orifice of said second conduit, said valve means comprises a three-way valve disposed between said air pump and said conduits and alternatively providing fluid communication between said air pump and said first conduit and between said air pump and said second conduit, and said valve control means comprises a switch controlling said three-way valve in accordance with the temperature of said engine, said switch being responsive to a temperature of said engine above a predetermined level to cause said three-way valve to provide fluid communication between said air pump and said first conduit and to a temperature of said engine below said predetermined level to cause said three-way valve to provide fluid communication between said air pump and said second conduit.

4,134,263
AIR CLEANER FOR USE IN AN INTERNAL COMBUSTION ENGINE

Noboru Matsumoto; Mikio Nakashima; Humihiro Kokubo; Yukio Nakamura, and Yoshiaki Adachi, all of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 31, 1977, Ser. No. 802,052
Claims priority, application Japan, Mar. 25, 1977, 52-32161
Int. Cl.[2] F01N *3/10*
U.S. Cl. 60—293 10 Claims



1. An air cleaner of an internal combustion engine having an intake passage, an exhaust passage and a reed valve disposed in a secondary air feed conduit communicating said air cleaner with said exhaust passage, said air cleaner comprising:

a casing having a circumferential wall;

an air filter element disposed in said casing and defining a clean portion in an inside of said air filter element and a dust portion between said air filter element and said circumferential wall, said clean portion being connected to said intake passage;

elongated partition means arranged along said circumferential wall for defining a secondary air passage between said partition means and said circumferential wall, said secondary air passage having a first end and a second end opening into the atmosphere, said second end being located at a position remote from said first end;

a secondary air inlet disposed in said first end of the secondary air passage and connected to said secondary air feed conduit;

a secondary air filter element disposed in said secondary air passage at a position near said secondary air inlet, and;

hole means for communicating said dust portion with said secondary air passage.

4,134,264
DOUBLE BUBBLE WHEEL ENGINE

Stephen C. Baer, P.O. Box 422 (W. Ella Rd.), Corrales, N. Mex. 87048

Filed Jan. 17, 1977, Ser. No. 758,992
Int. Cl.[2] F03G *3/00*
U.S. Cl. 60—516 2 Claims

1. An engine comprising:

a. a rotatable shaft mounted on bearings and inclined with respect to the gravitational or centrifugal field,

b. a plurality of hot divers rigidly fixed to the shaft and interconnected with one another at their lower ends,

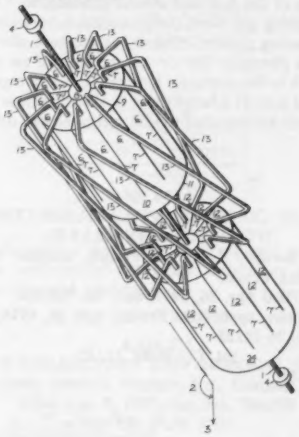
c. a plurality of cold divers rigidly fixed to the shaft and interconnected with one another at their lower ends,

d. a plurality of tubes each connecting the top of one cold diver to the top of one hot diver, wherein the so-connected divers are separated by a phase angle with respect to the shaft,

e. a plurality of heat regenerators situated so as to regenerate the flow of different temperature gasses passing through the interconnecting tubes,

f. a heat exchanger of large surface area at the top of each diver,

g. a fluid filling each plenum connecting the divers and partially filling each diver,



h. a means for heating the fluid in the hot divers,

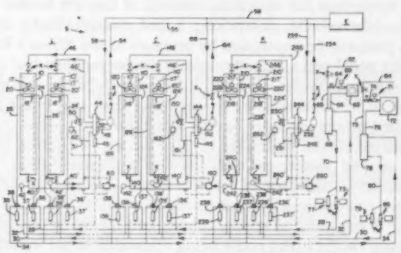
i. a means for cooling the cold divers,

j. a gas filling the volume of the divers and connecting tubes not occupied by the working fluid.

4,134,265
METHOD AND SYSTEM FOR DEVELOPING GAS PRESSURE TO DRIVE PISTON MEMBERS

William B. Schlueter, Rte. 1, Box 174, Big Pine Key, Fla. 33043

Filed Apr. 26, 1977, Ser. No. 790,970
Int. Cl.[2] F03G *7/06;* F01B *29/00*
U.S. Cl. 60—516 18 Claims



1. A method of delivering gas pressure to drive one or more pistons in an engine or like machine to produce working strokes comprising the steps of:

(a) establishing a given quantity of gas in a gas flow circuit arrangement;

(b) introducing substantially equal portions of the gas into each of a first container and a second container;

(c) developing a change in pressure in at least one of the two equal portions of gas by changing the temperature thereof;

(d) establishing communication between the first and second containers to allow gas pressure in the separate containers to equalize by an initial flow of gas from the container having a greater pressure to the one having lower pressure after said step (c);

(e) cutting off communication between the first and second

containers after equalizing the pressure therein by said step (d);

(f) again developing a change in gas pressure in at least one of the first and second containers to cause a relative increase in gas pressure of the container to which gas flowed in said step (d) by changing the temperature in at least one of the first and second containers;

(g) establishing gas flow communication between the container having greater relative gas pressure after said step (f) and a piston or like driven member of an engine and then back to the container having less relative gas pressure after said step (f) whereby due to such gas flow a working stroke will be imparted to said piston or like driven member.

4,134,266

HYDRAULIC CONTROL APPARATUSES COMBINED WITH FRICTION BRAKES

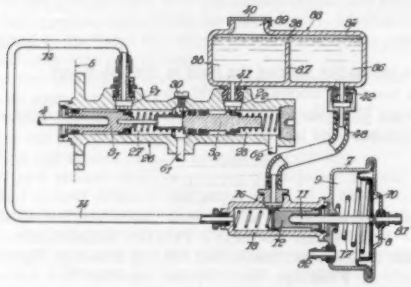
Jean-Claude Sertori, Eaubonne, France, assignor to Labavia S.G.E., Paris, France

Filed Apr. 26, 1977, Ser. No. 791,033

Claims priority, application France, Apr. 29, 1976, 76 12798; Oct. 15, 1976, 76 31125

Int. Cl.² B60T *11/20*

U.S. Cl. 60—562 **1 Claim**



1. Apparatus for hydraulic control of friction brakes of an automobile vehicle, comprising a first mastercylinder including a piston to be controlled by pressure of the driver's foot on a brake pedal and a second master-cylinder independent of said first master-cylinder, said second master-cylinder including a piston to be controlled by means other than said brake pedal, said first master-cylinder having a pressure fluid outlet directly connected to the hydraulic control-circuit of friction brakes, said second master-cylinder having a pressure-fluid outlet exclusively connected to the first master-cylinder at the place thereof conventionally used to connect said first master-cylinder to a reservoir of supply liquid, said means other than the pressure on the brake pedal being releasable at the initiative of the driver and being arranged to cause only a relatively gentle hydraulic brake-pressure as required from time-to-time during normal running of the vehicle, said first master-cylinder being a tandem master-cylinder which comprises a first piston connected by the intermediary of a linkage to the brake pedal and a second piston dividing the interior cylindrical cavity of said tandem master-cylinder into first and second chambers, said first chamber being situated between said two pistons and connected by a first output-conduit to a first hydraulic brake control-circuit, and said second chamber being situated at an end of said cylinder, and being connected by a second output-conduit to a second hydraulic brake control-circuit, said two chambers being supplied with liquid through respectively two lateral connections, and said output of said second master-cylinder being connected to one of said lateral connections of the first master cylinder, a first reservoir for supplying the second master-cylinder with braking liquid, another reservoir connected to the other of said lateral connections of the first master-cylinder and being an integral part of the first reservoir, the second master-cylinder being situated lower than the first master cylinder, the bottom of said another reservoir being connected directly to said other lateral connection of the first master cylinder and the bottom of said first reservoir being connected by a flexible pipe to the lateral connection for the supply of the second master-cylinder with braking fluid.

4,134,267

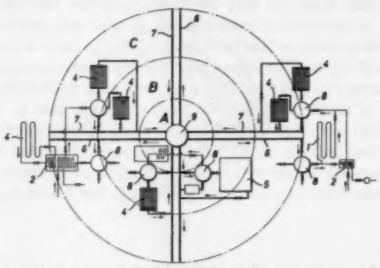
METHOD AND DEVICE FOR UTILIZING WASTE HEAT

Karl Hollemann, Laubanerstrasse 10, 3207 Harsum 1/Borsum, Fed. Rep. of Germany

Filed May 17, 1976, Ser. No. 687,351

Int. Cl.² F01K *17/02*

U.S. Cl. 60—648 **7 Claims**



1. An arrangement for utilizing the waste heat from a thermal power station, comprising in combination: a thermal power station, a plurality of annular zones surrounding said power station, said zones having different temperature levels decreasing in discrete steps radially outwardly from zone to zone, at least one heat consumption location in each said zone having a heat requirement appropriate to the temperature level of the zone in which it is located, and thermally insulated pipe conduits connecting said locations to said power station and with each other; said zones receiving heat from said power station and supplying heat at different temperature levels to respective consumption levels in said zones.

4,134,268

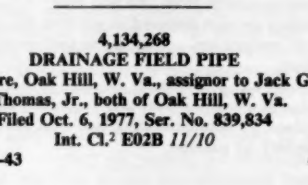
DRAINAGE FIELD PIPE

John E. Elmore, Oak Hill, W. Va., assignor to Jack G. Elmore and H. P. Thomas, Jr., both of Oak Hill, W. Va.

Filed Oct. 6, 1977, Ser. No. 839,834

Int. Cl.² E02B *11/10*

U.S. Cl. 405—43 **4 Claims**



1. An improved drainage field pipe, comprising:

a cylindrical tube of substantially circular cross section having a principal axis slightly inclined with respect to the horizontal, an inlet end, an outlet end, an upper side and a lower side, for conducting a fluid slurry containing solid particles from a source connected to said inlet end, to be dispersed along said lower side into a subterranean drainage trench lined with crushed rock;

a plurality of slots through said tube distributed along said lower side thereof, each having their length dimension perpendicular to said principal axis and greater than their width dimension, said width dimension being approximately one inch, said length dimension lying along a circular arc on said lower side of said tube, intersecting an angle from said principal axis of less than but approximately equal to 180°;

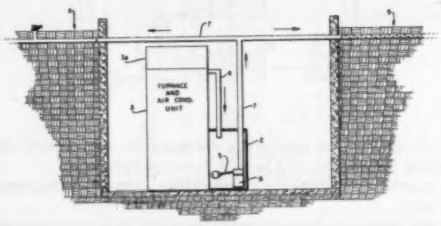
whereby said slots allow said solid particles from said fluid slurry to pass out of said tube into said drainage trench while preventing said crushed rock from passing from said drainage trench into said tube while said tube retains its structural strength.

4,134,269

LAWN WATERING SYSTEM

Frederick R. Arzet, 2136 Plymouth La., Marietta, Ga. 30062

Filed Nov. 3, 1977, Ser. No. 848,029
Int. Cl.² E02B *13/00*
U.S. Cl. 405—37 **2 Claims**



1. In combination with a domestic central air conditioning unit, which is used to cool a home or other building, and like air directing units which during the course of their operation produce a quantity of waste condensate, apparatus for continually collecting and storing said waste condensate and for intermittently automatically distributing said condensate throughout a region to be irrigated, said apparatus comprising a holding tank for collecting said waste condensate and a drainage conduit for directing said waste condensate from said air conditioning unit to said holding tank, a depth sensing device for indicating the level of said waste condensate collected in said tank, a pump means responsive to said depth sensing device for pumping said waste condensate collected in said holding tank from said holding tank, said pump means being automatically turned on by said depth sensing device to pump collected waste condensate from said holding tank when said depth sensing device indicates that the level of condensate in said tank has reached a predetermined maximum and automatically turned off by said depth sensing device when said depth sensing device indicates that the level of condensate in said tank has reached a predetermined minimum thus allowing said condensate to refill said tank to said predetermined maximum level, and a discharge conduit associated with said pump means and including irrigation means for directing said waste condensate from said holding tank throughout said region to be irrigated.

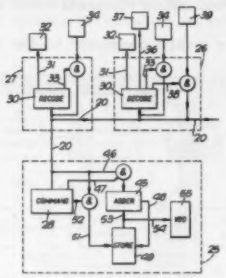
4,134,270

MINE ROOF SUPPORT CONTROL

Fred Small, Lathom, and Kenneth Darbyshire, Platt Bridge, Near Wigan, both of England, assignors to Gullick Dobson Limited, England

Filed Dec. 21, 1976, Ser. No. 753,161
Claims priority, application United Kingdom, Dec. 23, 1975, 52537/75; Mar. 27, 1976, 12444/76
Int. Cl.² E21D *15/44*
U.S. Cl. 405—302 **14 Claims**

1. A system for monitoring the relative positions of a row of mine roof supports, comprising, for each of at least some of the supports, means for providing data relating to successive actual advances of each support and anchorage therefor, the system further comprising means for accumulating and storing



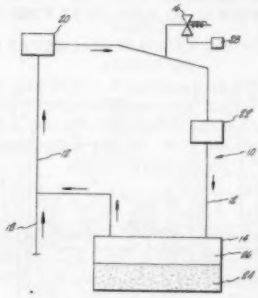
such data for said at least some supports, and means for displaying the accumulated and stored data as an offset from a nominal or expected advance.

4,134,271

VAPOR COLLECTION AND DISPOSAL SYSTEM

Angelo P. Datis, 16921 S. Western Ave., Gardena, Calif. 90249

Filed Apr. 5, 1977, Ser. No. 784,930
Int. Cl.² F17C *7/02*
U.S. Cl. 62—54 **6 Claims**



1. A device for increasing the concentration of hydrocarbons in a stream of lean hydrocarbon vapors prior to the disposal of said vapors comprising:

a circulation loop disposed between a liquid hydrocarbon storage tank and a disposal unit;

a vapor pumping means for pumping hydrocarbon vapors in said circulation loop;

a vapor inlet for introducing said lean vapors into said circulation loop; and

means for activating said disposal unit only when said lean hydrocarbon vapors are passed into said circulation loop.

4,134,272

PROTECTION CIRCUIT FOR A DUAL SOURCE REFRIGERATION UNIT

Robert C. Reimann, Syracuse, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

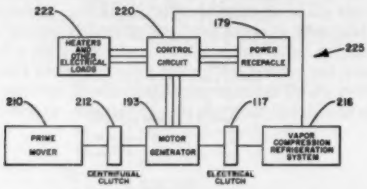
Filed Jun. 3, 1977, Ser. No. 803,088
Int. Cl.² F25B *49/00*
U.S. Cl. 62—115 **14 Claims**

1. In a refrigeration unit having an electrical power circuit, an electrical control circuit including temperature control means for selecting an appropriate mode of operation for the unit, an electrical protective circuit associated with the control circuit for protecting the internal components of the unit from damage due to malfunction which comprises:

relay means connected to the temperature control means for selectively energizing the power circuit;

voltage dependent means for energizing the relay means when the power circuit voltage is within a predetermined range;

a high pressure switch connected to the relay means for



de-energizing the relay means when the pressure within the refrigeration system is not within a predetermined range; and

time delay means connected to the relay means to allow the relay means to be energized for a predetermined time period during which the voltage dependent means may be bypassed.

4,134,273

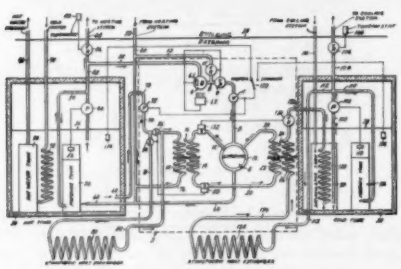
HOME HEATING AND COOLING SYSTEM

Robert F. Brautigam, P.O. Box 102, Agenda, Kans. 66930

Filed Apr. 22, 1977, Ser. No. 789,785

Int. Cl.[2] F25B *15/00;* **A25D** *23/12;* **F24H** *7/00*

U.S. Cl. 62—141 **14 Claims**



1. A home heating and cooling system comprising:

a. an insulated hot tank containing a hot liquid,

b. an insulated cold tank containing a cold liquid,

c. means operable to circulate hot liquid from said hot tank to a home heating system operable thereby, whereby said hot liquid is cooled, and to return said cooled liquid to said hot tank,

d. means operable to circulate cold liquid from said cold tank to a home cooling system operable thereby, whereby said cold liquid is warmed, and to return said warmed liquid to said cold tank, and

e. a continuously operable refrigeration unit operable to extract heat from said cold tank and to deposit the heat thus extracted into said hot tank, said refrigeration unit including heat absorbing elements, heat dispersing elements, means operable to circulate a refrigerant fluid continuously in a closed between said heat absorbing and heat dispersing elements of said unit, and means in said refrigerant fluid circuit whereby said fluid is rendered colder than said cold tank at said heat absorbing elements, and hotter than said hot tank at said heat dispersing elements,

f. heat exchanger means operable by the temperature differential therebetween to transfer heat from said cold tank to said heat absorbing elements, and

g. heat exchanger means operable by the temperature differential therebetween to transfer heat from said heat dispersing elements to said hot tank liquid.

4,134,274

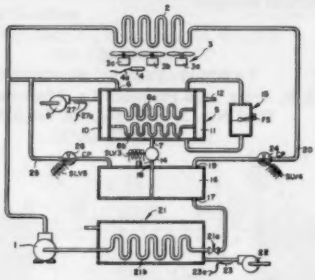
SYSTEM FOR PRODUCING REFRIGERATION AND A HEATED LIQUID AND CONTROL THEREFOR

Clifford N. Johnsen, La Crosse, Wis., assignor to The Trane Company, La Crosse, Wis.

Filed Jan. 26, 1978, Ser. No. 872,406

Int. Cl.[2] F25D *17/06*

U.S. Cl. 62—179 **13 Claims**



1. A system for producing refrigeration and selectively operable for producing a heated liquid comprising

a. compressor means for compressing a vaporized regrigerant;

b. air cooled condenser means connected to said compressor means for receiving compressed refrigerant and condensing same by heat exchange with a source of air, further including fan means for forcing said air in heat exchange relationship with said air cooled condenser means;

c. liquid cooled condenser means connected to said compressor means for receiving compressed refrigerant and condensing same by heat exchange with a source of liquid, whereby a heated liquid is produced;

d. evaporator means for expanding and vaporizing said condensed refrigerant in heat exchange relationship with a refrigeration load and returning the vaporized refrigerant to said compressor means;

e. means for transferring condensed refrigerant from said air cooled and liquid cooled condenser means to said evaporator means, said air cooled condenser means remaining operable to condense refrigerant at reduced capacity during those times that said liquid cooled condenser means is operable to produce a heated liquid; and

f. control means for said system comprising

i. first means for sensing the demand for heated liquid from said liquid cooled condenser means; and

ii. second means responsive to said first means for reducing the capacity of said fan means in response to increased demand for heated liquid during those times that such demand exists, whereby the capacity of said air cooled condenser means is controlled in response to the demand for heated liquid during those times that such demand exists.

4,134,275

VEHICLE ROOF-MOUNTED AIR CONDITIONING UNIT

Donald E. Erickson, Minneapolis, and Rodney H. Volk, Eden Prairie, both of Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Sep. 28, 1977, Ser. No. 837,054

Int. Cl.[2] B60H *3/04;* **F25D** *17/06*

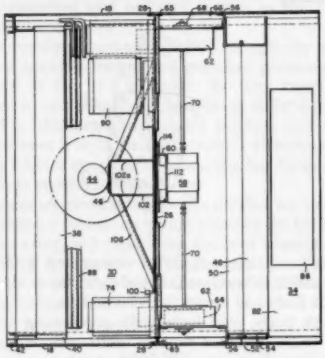
U.S. Cl. 62—244 **10 Claims**

1. An air conditioning unit for mounting on the roof of a vehicle, said unit comprising air cooling and heating components, including an evaporator coil, a condenser coil, a heater

coil, a condenser fan driven by a first motor, evaporator fan means driven by a second motor, and a housing for enclosing and supporting said components, said housing comprising:

a pair of opposed facing side panels and a cross panel secured at opposite ends to generally the midpoint of said respective side panels;

first means defining a generally planar bottom member coextensive with the area between the side panels, and second means in opposed relationship to said first means and generally coextensive therewith to define a cover member, whereby said housing generally defines an enclosure internally partitioned by said cross panel into a first compartment and a second compartment;



said condenser coil disposed within said first compartment extending between and supported by said opposed side panels;

said heater coil and evaporator coil disposed within said second compartment, each of said coils extending between and supported by said opposed side panels, and;

means supporting said condenser fan and first motor in said first compartment cantilevered from said cross panel, and means supporting said second motor in said second compartment cantilevered from said cross panel in generally opposed relationship with said first motor, whereby said first and second motors generally counterbalance one another to reduce torsional loading on said cross panel and the weight of said components are supported from the opposed side panels.

4,134,276

CONTAINER FOR STORAGE OF ARTICLES AND DEVICE FOR UTILIZATION OF SOLID CARBON DIOXIDE

Robert D. Lampard, 30 Kings Park Rd., West Perth, Western Australia, Australia

Filed May 19, 1977, Ser. No. 798,520
Int. Cl.[2] F25D *3/12*
U.S. Cl. 62—383 **21 Claims**

1. Device for holding solid carbon dioxide for transfer of heat between the solid carbon dioxide and a heat transfer surface upon which the device is in use stood;

said device comprising

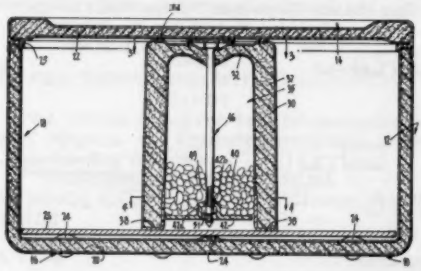
a heat insulated body having an opening at one end and an interior cavity to which said opening provides communication,

said one end of said body defining a generally annular base surface around said opening for engaging said heat transfer surface when the device is stood thereon,

said cavity extending away from said base surface and having therein a member which extends at least partly across the cavity to substantially close off a portion of the cavity between the member and an opposite end of said body remote from said one end,

said member presenting an inwardly directed support surface for supporting solid carbon dioxide thereon within said closed off portion of the cavity, and

adjustment means being provided for moving said member to vary the spacing between the support surface of the



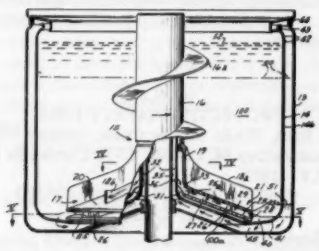
member and said base surface whereby, when the device is in use stood on said heat transfer surface, the resistance to heat flow from the heat transfer surface to solid carbon dioxide supported on the support surface is variable by varying said spacing.

4,134,277

WATER SAVER FOR WASHER USING PUMPING AGITATOR

Clark I. Platt, and Jack F. Clearman, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 680,776, Apr. 27, 1976, Pat. No. 4,077,239.
This application Aug. 15, 1977, Ser. No. 824,788
Int. Cl.[2] D06F *13/02*
U.S. Cl. 68—53 **3 Claims**



1. In a vertical axis washing machine having a tub and a spin basket therein,

the spin basket having side and lower walls and a center post formed sealingly together and forming restricted first and second sets of apertures respectively through the lower wall and the center-post thereof, and the side wall being substantially imperforate; and

agitator means arranged within the basket and having water pumping means to draw water in a first flow from the basket and into the tub through the first set of apertures and in a second flow from the tub into the basket through the second set of apertures,

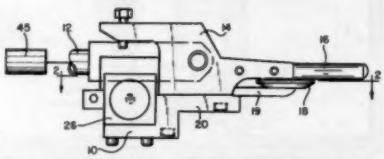
the second flow being greater than the first flow until a substantial water level differential is established between the basket and tub,

whereby to conserve water, energy, and wash detergent by transferring water from the tub to the basket for contact with articles therein to be washed.

4,134,278
MACHINE FOR PERFORMING AN OPERATION ALONG A NON-RECTILINEAR WORKPIECE PERIPHERY

Michael M. Becka, Nashua, N.H., assignor to International Shoe Machine Corporation, Nashua, N.H.

Filed Nov. 25, 1977, Ser. No. 854,947
Int. Cl.[2] C14B *1/44*; A43D *95/00*
U.S. Cl. 69—6.5 6 Claims

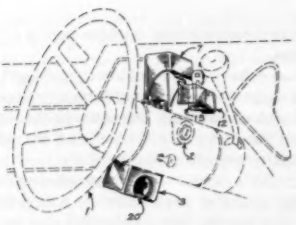


1. A machine for performing an operation along a non-rectilinear periphery of a workpiece surface comprising: a support for supporting the workpiece; a sensing member, located rearwardly of the support, adapted to engage a non-rectilinear side of the workpiece corresponding to said non-rectilinear periphery; a tool, having an operating portion located forwardly of the sensing member in forward-rearward alignment with the sensing member, adapted to perform said operation; means for so moving the support as to move said workpiece side past the sensing member and as to move the corresponding portion of said workpiece past the tool; and means for causing the sensing member and the tool to so move forwardly-rearwardly in unison during said support movement as to enable the sensing member to be in engagement with said workpiece side and as to enable the tool to perform said operation along said workpiece periphery; the machine characterized in having the improvement comprising: means mounting the sensing member for lateral movement between a central position, in which the tool is in said forward-rearward alignment with the sensing member, and laterally offset positions on opposite sides of said central position; and powered means, effective during said support movement, for effecting lateral movements of the sensing member from each of said positions to a selected other of said positions.

4,134,279
PROTECTIVE SAFETY LOCK

Steven G. Ross, 201-04 Epsom Cause, Queens Village, N.Y. 11427, and Jeffrey M. Ladisic, 17-19 Clintinville St., Whitestone, N.Y. 11357

Filed Apr. 22, 1977, Ser. No. 789,932
Int. Cl.[2] E05B *65/12*
U.S. Cl. 70—18 4 Claims



1. In a steering column locking mechanism a protective device therefor comprising;

(a) an enclosure composed of two hingedly connected semi-circular housings each disposed to wrap around said steering column,

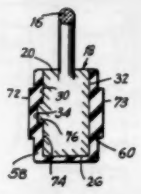
(b) open chamber means forming an integral part of each of said housings and carried thereby and disposed to reside within each other when the said enclosure is wrapped around said steering column,

(c) concealed locking means supported by one of said chambers and disposed to engage the other chamber in locked engagement when the chambers reside within each other.

4,134,280
LOCK COVER

Joseph Y. Pelavin, North Bergen, N.J., and Bela G. Szabo, Carnegie, Pa., assignor to Lark Luggage Corporation, New York, N.Y.

Filed Mar. 17, 1977, Ser. No. 778,522
Int. Cl.[2] E05B *67/38*
U.S. Cl. 70—55 9 Claims



1. A lock and cover therefor comprising a lock body, a cover for said lock body, said cover covering at least a portion of said lock body and means for releasably retaining said cover to said lock body, said lock body comprising forward and rearward walls, top and bottom walls, side walls, and said cover including forward, rearward and side panels covering at least a portion of each of said forward, rearward and side walls, one of said lock body and lock cover being formed with at least one lengthwise rib on at least one of the side walls or side panels thereof and at least one laterally extending rib on at least one of the forward and rearward walls or forward and rearward panels and lock cover being formed with corresponding channels in the respective sides or panels thereof positioned and dimensioned to mate with the corresponding ribs.

4,134,281
CAM-TYPE DOOR LOCK WITH RECESSED HANDLE

Albert L. Pelcin, Aurora, Ohio, assignor to The Eastern Company, Cleveland, Ohio

Filed Aug. 8, 1977, Ser. No. 822,520
Int. Cl.[2] E05B *13/10*
U.S. Cl. 70—208 11 Claims

1. A door lock of the type used to lock a pivotally mounted door in a closed position, comprising:

(a) two keeper members adapted to be secured to a door frame near two opposite edges of a door opening defined by the door frame, which edges extend transversely to an axis about which a door is mounted for pivotal movement relative to the door frame;

(b) an elongate shaft structure adapted to be secured to the pivoted door with its longitudinal axis spaced from and extending susbtantially parallel to the pivot axis of the door;

(c) two cam members each being secured to opposite end regions of the shaft and being cooperable with the keeper members for securing the door in a closed position;

(d) a housing adapted to be mounted in an opening formed in the door, the housing having sidewalls and a backwall which cooperate to define a forwardly facing recess, and having a pair of aligned openings formed in opposite side wall portions;

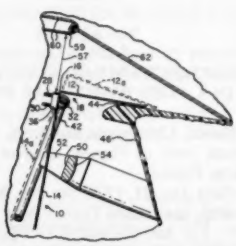
(e) the shaft structure having a portion which extends through the openings and through the recess;
(f) an elongate handle having one end portion secured to the shaft portion and being pivotal with the shaft structure relative to the housing between a nested position wherein the handle is nested within the recess, and a projecting position wherein the other end portion of the handle projects forwardly from the recess;
(g) a latch mechanism carried by the housing, the latch mechanism including a latch member movable between latched and unlatched positions, the latch member being operable to engage and releasably retain the handle in its nested position when the latch member is in its latched position and the handle is in its nested position;
(h) a key-operated lock cylinder carried by the handle for movement therewith;
(i) a lock member operated by the lock cylinder and being movable between locked and unlocked positions as a key is turned in the lock cylinder, the lock member being operable to retain the latch member in its latched position when the handle is in its nested position and when the latch member is in its latched position, whereby a primary locking system operable to retain the handle in its nested position is provided; and
(j) lock member reinforcing means carried by the housing and defining a formation which receives the lock member for supporting and rigidifying the lock member and for establishing a secondary locking system operable to retain the handle in its nested position when the lock member is in its locked position.

4,134,282

MOTOR VEHICLE ANTI-THEFT DEVICE

Brian W. Callahan, 27 Adelaide St., Jamaica Plain, Mass. 02130

Filed Jun. 30, 1977, Ser. No. 811,522
Int. Cl.² B60R *25/02*
U.S. Cl. 70—212 **9 Claims**



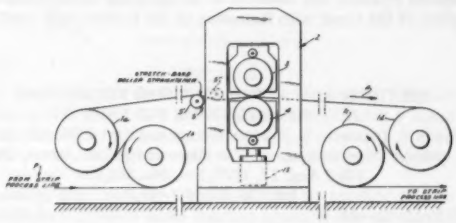
1. In a device for preventing the theft of a vehicle of the type having a steering wheel with a steering wheel rim, steering wheel spokes and steering wheel hub mounted in front of a panel having a top edge in proximate relation to the top of said steering wheel, the combination of:
a. an L shaped member in the form of a pair of legs extending from a common junction,
b. said legs being of a length such that when said L shaped member is in operative position on said steering wheel with said common juncture at the top of said wheel, one of the legs overlaps said top edge of said panel by an amount such that the top of said panel is an obstruction to substantial rotary movement of said one of the legs in conjunction with rotary movement of said steering wheel and the other leg overlaps said steering wheel hub, and
c. means for locking said L shaped member in said operative position to said steering wheel rim at the top of said steering wheel with said one leg overlapping said top edge of said panel and said other leg overlapping said hub and said means for locking includes at least one hole through one of said legs, a U shaped member having two sides for straddling the rim of said steering wheel and at least one of said sides having an extension extending through said hole, and a lock body which with said side extension includes means for locking onto said side extension in manner such that said U shaped member cooperates with said L shaped member to circumscribe said steering wheel rim and secure said first mentioned one of said legs to its overlapping position at the top of said panel.

4,134,283

STRIP-PROCESSING LINES WITH COLD-ROLLING STANDS

Oskar F. Noé, Mülheim (Ruhr), Fed. Rep. of Germany, assignor to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Feb. 11, 1977, Ser. No. 769,266
Claims priority, application Fed. Rep. of Germany, Feb. 13, 1976, 2605723
Int. Cl.² B21B *37/00*
U.S. Cl. 72—8 **10 Claims**



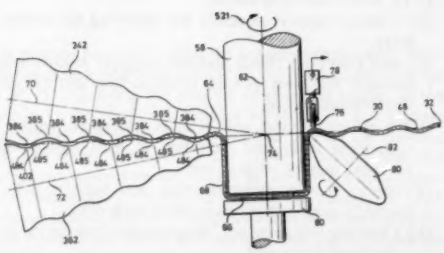
1. A cold after-rolling apparatus for a strip-process line, comprising:
a rolling stand having an upper and a lower roll traversed by a strip;
respective motors connected to said rolls for driving same;
pressure means for pressing said rolls against said strip and relieving the pressure of said rolls against said strip;
means for energizing said motors, thereby driving said rolls;
first control means responsive to the peripheral speeds of said rolls and the linear speed of said strip for controlling said motors to cause said rolls to accelerate to peripheral speeds equal to the linear speed of said strip; and
second control means for thereafter controlling said motors in a moment control thereof while said rolls bear against said strip.

4,134,284

METHOD AND APPARATUS FOR THE MANUFACTURE OF HOLLOW BODIES

Achim Nitschke, Georg-Wilhelm-Strasse 34, Hamburg 93, Germany (D-2102)

Filed Jun. 1, 1977, Ser. No. 802,306
Int. Cl.² B21D *22/14*
U.S. Cl. 72—84 **70 Claims**



1. Process for producing a hollow body from a plane or

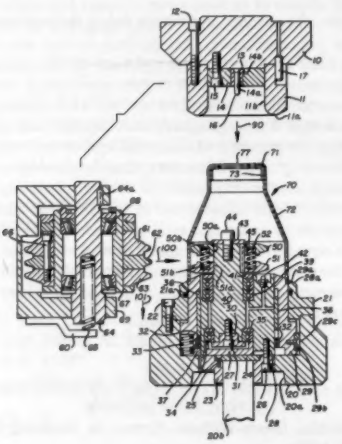
conical-shell shaped blank consisting of a shapable material, in particular metal, the blank being undularly deformed starting at at least one machining point with formation of at least one wave loop arched to one side relative to the original centerline, the blank and the machining point being mutually rotated about an axis of rotation extending at least approximately through the cross-sectional center of gravity of the hollow body to be formed, and in so doing the undular shaping being continued with formation of a propagating wave having a directional component extending in circumferential direction, and the wave being transposed by repeated undular shaping at machining points radially offset relative to each other in a direction which contains a predominantly radial directional component, characterized in that the waves are transposed exclusively parallel to the original plane of the blank and in a single directional sense toward the hollow body to be formed, and that, in a deflection zone annularly surrounding the cross-sectional center of gravity of the hollow body to be formed in spaced relation, the material is brought out of the original plane of the blank with formation of the hollow body wall.

4,134,285

METHOD AND APPARATUS FOR PRODUCING MULTIPLE GROOVE PULLEYS

Frank A. Iaconetti; G. Michael Gnora, and Carl J. Novak, all of Akron, Ohio, assignors to The Rogers Mfg. Co., Akron, Ohio

Filed Aug. 12, 1977, Ser. No. 823,939
Int. Cl.[2] B21H *1/00*
U.S. Cl. 72—84 **6 Claims**



1. Apparatus for producing cylindrical bodies having three or more V-shaped peripheral grooves therein from one piece of material, comprising:

(A) a rotary clamping chuck;

(B) a rotary support assembly for receiving the cylindrical body;

(C) said clamping chuck and said support assembly being movable relatively of each other to trap said cylindrical body therebetween;

(D) a rotary support roll assembly received within said cylindrical body and including at least two rotatably mounted unitary support rolls;

(E) spring means interconnecting said support rolls and normally urging them away from each other;

(F) a shaping roll assembly for grooving the exterior of said cylindrical body; and

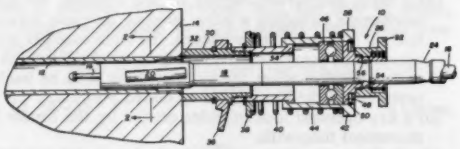
(G) said support assembly serving as a backup to said shaping roll assembly.

4,134,286

METHOD AND APPARATUS FOR EXPANDING TUBES

Paul W. Martin, Springfield, Ohio, assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 13, 1977, Ser. No. 832,855
Int. Cl.[2] B21D *39/10*
U.S. Cl. 72—122 **9 Claims**



1. Improved tube expander apparatus comprising:

an elongate, rotatable expander means for insertion into an end of a tube to be expanded against a header;

a stop collar encircling a portion of said expander means, said stop collar having a first end for engaging the header and a second end;

a thrust collar encircling a portion of said expander means and the second end of said stop collar, said stop collar and thrust collar being axially and rotatably movable relative to each other and including cooperable limit means for determining the relative axial movement therebetween; and,

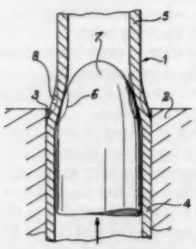
connection means for preventing movement between said thrust collar and said expander means, whereby said thrust collar and expander means can move together relative to said stop collar until said thrust collar engages the second end of said stop collar.

4,134,287

METHOD FOR MECHANICAL REMOVAL OF TENSILE STRESSES IN A TUBE WHICH HAS BEEN EXPANDED IN A SUPPORT

Georges Le Huédé, Champagne sur Seine, and Guy Zacharie, Fontainebleau, both of France, assignors to Electricite de France, Paris, France

Filed Jun. 21, 1977, Ser. No. 808,563
Claims priority, application France, May 2, 1977, 77 13196
Int. Cl.[2] B21D *39/08*
U.S. Cl. 72—370 **6 Claims**



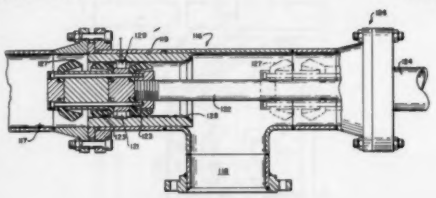
1. A method for the mechanical removal of tensile stresses in a tube including a radially expanded portion, a non-expanded portion, and a transition zone between said expanded and non-expanded portions, comprising

contacting said transition zone with expansion means and effecting a diametral deformation of controlled intensity and direction in said transition zone.

4,134,288
LIQUID METER PROVER APPARATUS

Kee W. Kim, Houston, Tex., assignor to Daniel Valve Company, Houston, Tex.

Filed Oct. 14, 1977, Ser. No. 842,299
Int. Cl.[2] G01F 25/00
U.S. Cl. 73—3 7 Claims

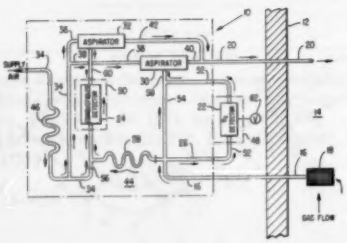


7. In an apparatus for controlling flow of liquid, a hollow body having spaced flow passages, a cylindrical sleeve carried by the body and disposed between the flow passages, plunger means within the body disposed in alignment with said sleeve and movable in opposite directions, said plunger means including resilient sealing means adapted to have a sealing engagement with the inner cylindrical surface of the sleeve when disposed within the same, said sealing means consisting of one member made of resilient material, having a rim of a diameter such that when it is moved within the sleeve the rim is contracted and sealing engagement established, and means for preventing hydraulic shock consisting of a resilient member carried by said plunger means being U-shaped in radial section with a rounded annular area faced away from said sleeve.

4,134,289
GAS SAMPLING SYSTEM HAVING A FLOW INDICATOR

Thomas L. Bohl, Madison, and Robert E. Pocock, Highland Heights, both of Ohio, assignors to Bailey Meter Company, Wickliffe, Ohio

Filed Nov. 3, 1977, Ser. No. 848,004
Int. Cl.[2] G01N 1/24
U.S. Cl. 73—23 10 Claims



1. A gas analyzer for analyzing gases within a duct comprising:

supply air means;

inlet means mountable within the duct to draw a sample of the gases therein;

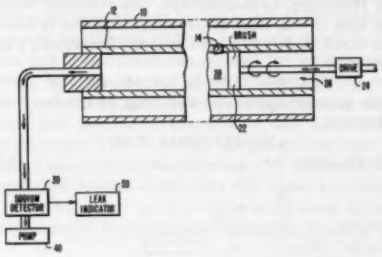
an oxygen analyzing assembly connected to said inlet means; and

aspirator means connected to said oxygen analyzing assembly for drawing gases from said inlet means through said oxygen analyzing assembly under normal conditions and drawing supply air from said supply air means through said oxygen analyzing assembly whenever said inlet means are blocked a predetermined amount.

4,134,290
TECHNIQUE FOR DETECTING LIQUID METAL LEAKS

James E. Bauerle, Pittsburgh, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 6, 1977, Ser. No. 830,948
Int. Cl.[2] G01M 3/08
U.S. Cl. 73—40.5 R 7 Claims



1. A method for detecting a liquid metal leak in a heated working fluid flow tube coaxially positioned within a liquid metal flow tube, comprising the steps of,

removing said liquid metal and said working fluid from respective flow tubes,

cooling said working fluid flow tube to produce a solid deposit of liquid metal reaction products at a location of said working fluid flow tube corresponding to a tube leak,

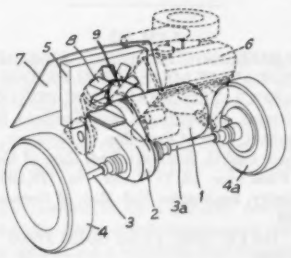
dislodging particles of said solid deposit, and

detecting said particles to determine the presence of a leak in said working fluid flow tube.

4,134,291
PROCESS FOR DETERMINING THE MOVEMENT RESISTANCE CHARACTERISTICS OF AN AUTOMOBILE VEHICLE

Jean A. Gregoire, 92, Avenue Niel, 75017 Paris, France

Filed Mar. 16, 1978, Ser. No. 887,140
Claims priority, application France, Mar. 29, 1977, 77 09392
Int. Cl.[2] G01M 17/06
U.S. Cl. 73—133 R 10 Claims



1. A process for determining the movement resistance characteristics of an automobile vehicle on the road, comprising the steps of: (a) replacing the internal combustion engine of the vehicle by an electric traction motor fed by a source of current; (b) measuring the electrical power absorbed by the traction motor, and taking into account the engine efficiency and that of the transmission from the engine to the drive wheel(s) during two successive comparative trials at the same speed with the vehicle loaded with its normal load in one test and with the vehicle overloaded with a tare t on the other test to determine the useful power delivered at the drive wheels; (c) deducing the rolling resistance R_r and the rolling coefficient k of the vehicle from the difference between the power P when loaded

with normal load and the power P_f when loaded with the load and tare; (d) calculating the air resistance R_a from the difference between the total measured resistance and the rolling resistance R_r; and deducing from this the aerodynamic coefficient C_x of the vehicle.

4,134,292

TIRE TESTING APPARATUS

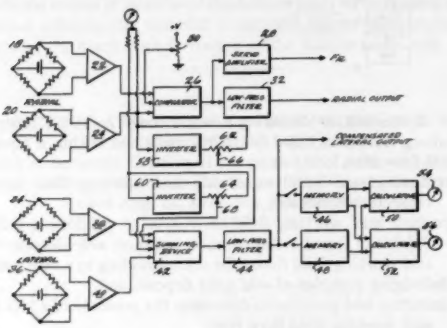
Herwig Honlinger, Grob-Rohrheim, and Friedrich Wenz, Seeheim, both of Fed. Rep. of Germany, assignors to Gebr. Hofmann G.m.b.H. KG, Maschinenfabrik, Darmstadt, Fed. Rep. of Germany

Filed Feb. 15, 1978, Ser. No. 878,712

Claims priority, application Fed. Rep. of Germany, Mar. 5, 1977, 2709682

Int. Cl.[2] G01M *17/02*

U.S. Cl. 73—146 **4 Claims**



1. Procedure for testing the nonuniformity of rotating bodies, and especially motor vehicle tires, comprising the steps of:

pressing said rotating body against a test drum;

measuring the radial and lateral reaction forces created by said pressing in at least two different locations on said drum; and

adding values proportional to said radial forces measured at each of the measuring locations to the respective lateral reaction forces in order to compensate for the inductive disturbances of the lateral force measurements caused by said radial forces.

4,134,293

PRESSURE DIFFERENTIAL INDICATING APPARATUS FOR A HYDRAULIC MEASURING BRIDGE AND ITS ASSOCIATED MEASURING PISTON

Dieter Handtmann, Sindelfingen, and Gotthold Raabe, Stuttgart-Fasanenhof, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

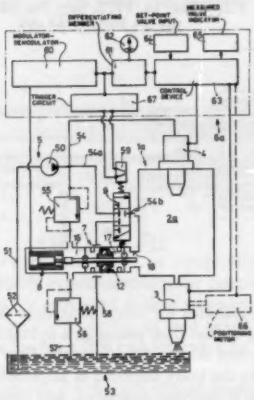
Filed Mar. 18, 1977, Ser. No. 779,130

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1976, 2611935

Int. Cl.[2] G01L *13/02*; G01M *19/00*

U.S. Cl. 73—168 **11 Claims**

1. Pressure differential responsive apparatus in a hydraulic measuring bridge including a measuring chamber that is provided with a standard valve means which emits a known throughflow quantity into said chamber and a further valve means being tested for discharging the throughflow quantity from said chamber to be measured thereby, said measuring chamber being associated with a pressure differential sensor having a movable wall one side of which is in communication with said chamber and the other side of which is exposed to a controlled pressure, said pressure differential sensor being provided with a signal transmitter responsive to movement of the movable wall for controlling the flow through the measuring chamber by adjusting one of said valve means, means for indicating the adjustment of said valve means, further characterized by said pressure differential sensor including a cylinder having a wall and further provided with a piston means associated with a piston rod, said piston rod having one free end thereof arranged to cooperate with said signal transmitter and



said piston means further including confronting sealing means having an extent which cooperates with said cylinder wall to form an annular seal therebetween.

4,134,294

DEVICE FOR SIMULTANEOUSLY MEASURING VARIOUS PARAMETERS OF THE DRILLING FLUID

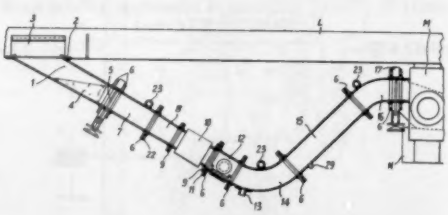
Jean Patillet, St-Germain-en-Laye, and Olivier Issenmann, Lamorlaye, both of France, assignors to Geoservices, Le Blanc-Mesnil and Societe Nationale Elf Aquitaine (Production), Courbevoie, both of, France

Filed Dec. 22, 1977, Ser. No. 863,307

Claims priority, application France, Dec. 27, 1976, 76 39136

Int. Cl.[2] E21B *47/10*

U.S. Cl. 73—153 **6 Claims**



6. A method for controlling the fluid losses in a production well which comprises measuring the flow of mud into a well and measuring the flow of mud returning from the well by passing the flowing mud through a control valve for controlling the flow velocity of the mud and preventing atmospheric air from entering the measuring conduit; passing said mud from said control valve through a flow meter for measuring the flow of said mud; passing said mud through a gamma ray absorption densimeter to determine the density of said mud and measuring the temperature of said flowing mud with a temperature monitoring means and comparing the flow of the mud exiting from the well with the flow of the mud entering the well to determine the fluid losses.

4,134,295

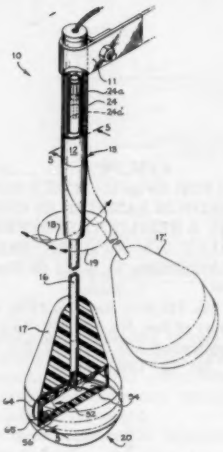
FLUID FLOW FORCE AND DIRECTION TRANSDUCER SYSTEM

William Alexander, 784 Dixon Way, Los Altos, Calif. 94022

Filed Nov. 18, 1977, Ser. No. 852,811

Int. Cl.[2] G01W *1/02*

U.S. Cl. 73—189 **16 Claims**



1. In a force transducer system including a drag body of a type adapted to move in response to application of force thereto, means for supporting said body for such movement, force transducer means coupled to the last named means and responsive to deflection of said drag body for registering the degree of force applied to said drag body, said transducer means being characterized by an elongate flexible hollow member, an elongate resistive element adapted to form a portion of an electric circuit extending along and within said member, and conductive fluid disposed within said hollow member in electrically conductive relation to said resistive element to move between advanced and retracted positions in response to bending movements of said member induced by deflection of said drag body, said movement of said conductive fluid serving to vary the resistance of that portion of said element adapted to be included in said circuit portion.

4,134,296

FLOW METER

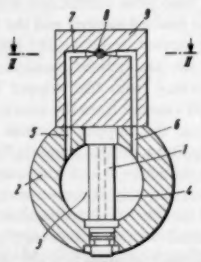
Hans-Jürgen Kastner, Schriesheim, Germany, assignor to Bopp & Reuther GMBH, Mannheim-Waldhof, Germany

Filed Mar. 20, 1978, Ser. No. 887,863

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712219

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 VS **7 Claims**



1. In a flow meter for measuring the speed of a fluid passing through a conduit, a combination comprising a turbulence producing bluff body extending substantially normal to the axis of the conduit through the interior of the latter to produce in the fluid passing through the conduit to opposite sides of said body vortices which alternatingly break away from the body and the frequency of which is proportionate to the speed of the fluid passing through said conduit, said body having a front face adapted to be impinged by the fluid passing through the conduit; a measuring conduit outside said first-mentioned conduit, said measuring conduit having a pair of open ends; a pair of bores each having one end communicating with the respective open end of said measuring conduit and another end communicating with the interior of said first-mentioned conduit, the other end of one of said bores communicating with said first-mentioned conduit to one side of said bluff body and slightly upstream of the front face thereof and the other end of the other of said bores communicating with the interior of said first-mentioned conduit at the other side of said bluff body and slightly downstream of said front face; and a feeler for measuring said frequency located in said measuring conduit.

4,134,297

TWO-WIRE TRANSMISSION SYSTEM FOR VORTEX-TYPE FLOWMETERS

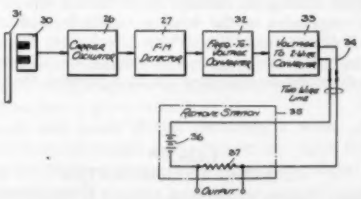
Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Division of Ser. No. 768414, Feb. 14, 1977, Pat. No. 4,094,194.

This application Oct. 27, 1977, Ser. No. 846,245

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 V.S. **5 Claims**



1. A transmission system for a vortex-type flowmeter adapted to measure the flow rate of a fluid passing therethrough by generating fluidic pulses whose frequency varies within a low-frequency range and is a function of flow rate, said flowmeter including a deflectable element that is caused to vibrate in accordance with fluidic pulses, said system comprising:

A. A sensor constituted by a variable reactance element included in the frequency-determining circuit of a carrier oscillator generating a relatively high-frequency carrier;

B. means operatively coupling said deflectable element to said sensor to vary the reactance thereof in accordance with said vibrations to thereby frequency-modulate said carrier in accordance with said fluidic pulses to produce a frequency-modulated carrier;

C. means to demodulate the frequency-modulated carrier to produce a low-frequency output signal whose frequency varies as a function of the flow rate;

D. means to convert said output signal into an analog voltage, said means being constituted by an analog-to-two-wire line converter; and

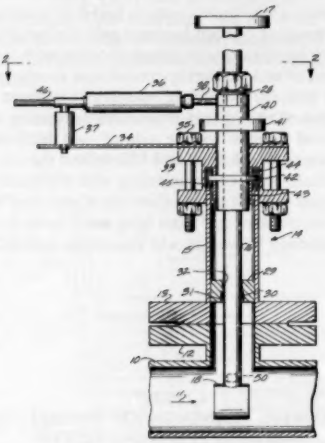
E. means to convey said analog voltage over a two-wire transmission line to a remote station to indicate said flow rate at a point remote from the flowmeter.

4,134,298

TURBINE FLOWMETER

James F. Guthrie, Tempe, Ariz., assignor to Flow Technology, Inc., Phoenix, Ariz.

Filed May 25, 1977, Ser. No. 800,562
Int. Cl.[2] G01F *1/115, 15/10*
U.S. Cl. 73—231 R **11 Claims**



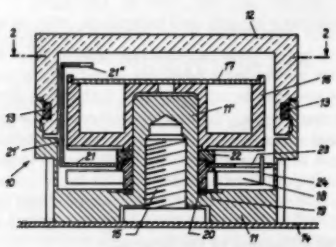
1. A turbine flowmeter comprising:
a turbine wheel;
means for supporting the turbine wheel for free rotation;
means for inserting the turbine wheel in a line to intercept fluid flowing therethrough and to rotate freely responsive to the intercepted fluid;
means for sensing the rotation of the turbine wheel; and
means responsive to the sensing means for reducing the speed of rotation of the turbine wheel when the speed of the turbine wheel exceeds a predetermined safe limit without diverting or changing the fluid flowing through the line.

4,134,299

COOKING THERMOMETER

Rolf Rüeger, Paudex, Switzerland, assignor to Rüeger SA, Crissier, Switzerland

Filed Jan. 24, 1978, Ser. No. 871,853
Claims priority, application Switzerland, Jan. 27, 1977, 1020/77
Int. Cl.[2] G01N *1/16*
U.S. Cl. 73—362.8 **9 Claims**



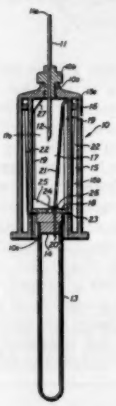
1. Cooking thermometer with a bimetallic spiral for turning a pointer around a scale marked on a circular dial, characterized by a watertight housing with a base and a transparent cover hermetically fitted to the said base, the base being made of a thermally conducting material and being capable of being mounted in a thermally conducting manner on the lid of a cooking vessel, by the means of fixing the base to the lid of a cooking vessel, and by a drum located inside the housing and supporting the dial, the said drum being mounted so as to rotate about an axial hub rigidly fixed to the base and being in frictional contact with the said hub, such that the position of the drum may be adjusted in order to calibrate the thermometer.

4,134,300

APPARATUS FOR EVACUATING AND THEN COLLECTING MEDIUM SAMPLES IN CONTAINERS SEALED BY A RESILIENT STOPPER AT SUBSTANTIALLY ATMOSPHERIC PRESSURE

Jan A. Svensson, Hakarpsvagen 53, S-561 00 Huskvarna, Sweden

Division of Ser. No. 717,814, Aug. 26, 1976, which is a continuation-in-part of Ser. No. 608,809, Aug. 28, 1975, abandoned. This application Apr. 25, 1977, Ser. No. 791,131
Int. Cl.[2] G01N *1/14*
U.S. Cl. 73—425.6 **6 Claims**

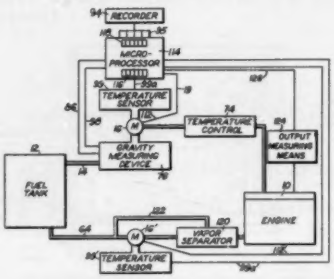


1. Apparatus for the evacuation of containers sealed at substantially atmospheric pressure by a resilient stopper well prior to the collection of the sample, and the collection of medium samples therein, which comprises, in combination, holder means movable reciprocably and retaining a container sealed by a resilient stopper, means movable towards and away from the stopper, and including a first cannula for piercing the stopper and communicating with the interior of the container, means providing a fluid flow connection from the interior of the container via the pierced stopper and the first cannula with a pressure-reducing device, reducing the pressure in the container to a desired subatmospheric pressure; the means movable towards and away from the stopper being capable of withdrawing the first cannula from the interior of the container sufficiently to permit the stopper to close after such withdrawal; means including a second cannula for penetrating the stopper after such withdrawal and communicating with the interior of the container; and means providing a fluid flow connection to the interior of the container via the pierced stopper and the second cannula with a supply of medium to be sampled for sucking such medium into the container under the subatmospheric pressure effected in the reduction in pressure in the container.

4,134,301
COMPENSATING FUEL MEASURING SYSTEM FOR ENGINES

Curtis L. Erwin, Jr., 5805 SE. Gladstone, Portland, Oreg. 97206

Continuation-in-part of Ser. No. 713,338, Aug. 11, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 803,885
Int. Cl.[2] G01F 9/00
U.S. Cl. 73—453 41 Claims



16. A compensated measuring system for use with a fuel combustion means having fuel supply means for supplying fuel to the combustion means, said system comprising

(a) volumetric measuring means measuring the fuel flow to the fuel combustion means,

(b) sensing means sensing the temperature of the fuel and having an output,

(c) gravity measuring means determining the gravity of the fuel and having an output,

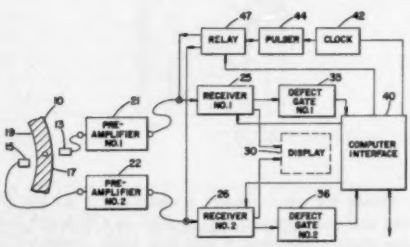
(d) responsive means responding to said outputs of said gravity measuring means and said temperature sensing means and determining the expansion characteristics of the fuel, and further responding to said volumetric measuring means and compensating the volumetric measurement for said expansion characteristics,

(e) and conversion means in said system converting said compensated volumetric measurement to gravimetric units.

4,134,302
PULSER FOR ULTRASONIC INSPECTION SYSTEM

Istvan M. Matay, North Royalton, Ohio, assignor to TRW, Inc., Cleveland, Ohio

Filed Jan. 13, 1978, Ser. No. 869,276
Int. Cl.[2] G01N 29/04
U.S. Cl. 73—612 6 Claims

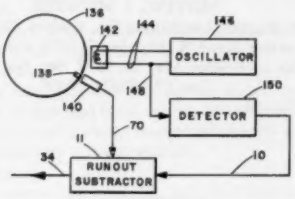


6. For use in an ultrasonic testing apparatus in which a transducer receives electrical exciting pulses and transmits ultrasonic energy corresponding thereto into a test specimen, a pulser circuit for forming said exciting pulses comprising a capacitor, first switching means for substantially instantaneously changing the voltage applied on one side of said capacitor to develop a sharp voltage swing on the other side of said capacitor, second switching means connected across said capacitor for providing a discharge path for said capacitor independent of said first switching means and actuated in response to said sharp voltage swing to provide a low impedance discharge path for substantially discharging said capacitor in a time period essentially determined by the capacitance of said capacitor, and output means connected to said other side of said capacitor to provide an output pulse in response to said voltage swing and the discharging of said capacitor.

4,134,303
METHOD AND CIRCUIT FOR PROVIDING ELECTRICAL RUNOUT REDUCTION IN ROTATING SHAFT VIBRATION DETECTION SYSTEMS

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation, San Diego, Calif.

Filed Jul. 20, 1977, Ser. No. 817,340
Int. Cl.[2] G01M 1/22
U.S. Cl. 73—660 14 Claims



6. The method of reducing by an electrical subtract runout signal the runout data signal portion of a composite electrical runout signal and vibration signal generated in a proximity probe circuit by a rotating shaft, which composite signal is synchronized with the rotating shaft tachometer signal, comprising the steps of,

placing a pre-programmed digital memory circuit module that stores a subtract runout signal for the rotating shaft, which runout signal is synchronized with the tachometer signal, into a given circuit,

through said given circuit providing a series of output counts synchronized to the tachometer signal for accessing the digital memory and providing the digital subtract runout signals,

converting the digital subtract runout signal to an analog subtract runout signal,

feeding the subtract runout signal and the composite signal to a subtract circuit that subtracts the subtract runout signal from the composite signal,

and selectively changing the memory circuit module to provide a different subtract runout signal for a different rotating shaft.

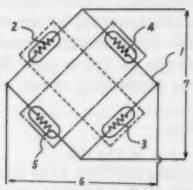
4,134,304
AIR PRESSURE TRANSDUCER OF DIFFUSION TYPE

Tadayoshi Yamamoto, 1-34-5 Mishono-cho, Itabashi-ku, Tokyo, Japan (175)

Filed Jul. 12, 1977, Ser. No. 815,070
Int. Cl.[2] G01L 21/12
U.S. Cl. 73—755 2 Claims

1. An air pressure sensor comprising a housing incorporating a flexible membrane dividing said housing into a sealed subatmospheric compartment on one side of said membrane and a further compartment on the other side of said membrane, means exposing said other compartment to air pressure to be measured, an electric bridge arrangement connected across said membrane, said bridge arrangement comprising a first branch subject to pressure within said subatmospheric com-

partment and electrical connections for transmitting signals from the respective branches to the exterior of said housing,



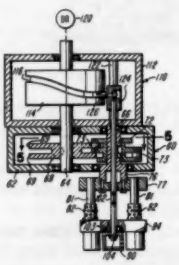
each of said branches including a pair of thermistors attached to respective sides of said membrane.

4,134,305

APPARATUS FOR INTERMITTENTLY ROTATING AND MOVING A MEMBER

Charles F. Hautau, 146 Hilltop Rd., Oxford, Ohio 45056

Division of Ser. No. 575,256, May 7, 1975, Pat. No. 4,024,963.
This application May 11, 1977, Ser. No. 795,896
Int. Cl.[2] F16H *27/04*
U.S. Cl. 74—24 **3 Claims**



1. Apparatus for intermittently rotating a head member and for also moving said head member in an axial direction, comprising an input shaft and a tubular output shaft supported for rotation in parallel spaced relation, a first cam mounted on said input shaft, a rotatable cam follower mounted on said tubular output shaft and engaging said first cam for intermittently rotating said output shaft in response to continuous rotation of said input shaft, means mounted on said output shaft and supporting said head member for rotation with said output shaft and for reciprocating axial movement relative to said output shaft, a rod member extending through said output shaft and connected to said head member for reciprocation within said output shaft, a generally cylindrical cam mounted on said input shaft for continuous rotation therewith, said cylindrical cam having a peripheral cam surface disposed generally adjacent the reciprocating path of said rod member, and a cam follower mounted on said rod member and engaging said peripheral cam surface for reciprocating said rod member and said head member in response to said continuous rotation of said input shaft.

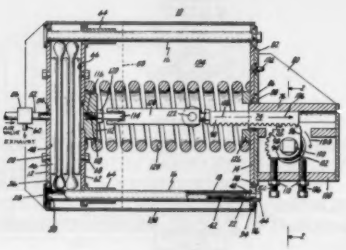
4,134,306

ROTARY ACTUATOR

Gunnar Grotness, Fort Wayne, Ind.; Charles S. Smith; Robert H. Morris, both of Rochester, N.Y., and Peter W. Boyer, Fort Wayne, Ind., assignors to Phd, Inc., Fort Wayne, Ind. and Hughes Industrial Products, Inc., Rochester, N.Y., part interest to each

Filed Sep. 20, 1976, Ser. No. 724,962
Int. Cl.[2] F16H *19/04*
U.S. Cl. 74—29 **14 Claims**

1. Apparatus for converting reciprocating motion to rotary motion comprising a supporting frame having two spaced apart mounting elements rigidly secured together, a fluid pressure actuating device operatively mounted between said elements for producing reciprocal motion along a line extending between said elements, an engaged rack and pinion assembly operatively mounted on one of said mounting elements, said rack being connected to said actuating device for reciprocal longitudinal movement in response to reciprocal motion



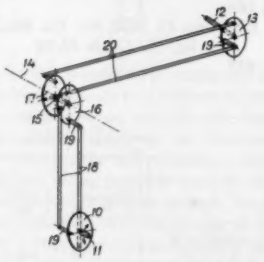
thereof, said pinion having a shape corresponding to the sector of a circle and having teeth on only the arcuate portion thereof, said pinion further having two abutment surfaces adjacent the opposite ends, respectively, of said arcuate portion, and two spaced-apart stop members adapted to be respectively engaged by said surfaces when said pinion is rotated between first and second positions, whereby the stroke of said actuating device is correspondingly limited.

4,134,307

MEANS FOR MECHANICAL TRANSMISSION

Bengt Nilsson, Vasteras, Sweden, assignor to ASEA, Vasteras, Sweden

Continuation of Ser. No. 467,676, May 4, 1974, abandoned. This application Apr. 22, 1977, Ser. No. 789,835
Claims priority, application Sweden, May 25, 1973, 7307367
Int. Cl.[2] F16H *21/14*
U.S. Cl. 74—66 **11 Claims**

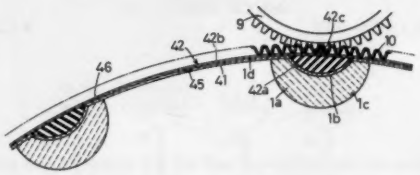


1. Means for mechanically transmitting a torque from a driving shaft to a parallel driven shaft at a distance from the driving shaft comprising a first link plate connected to the driving shaft, a second link plate connected to the driven shaft, a first pair of parallel shafts of different lengths extending axially in the same direction from each of said first and second link plates and angularly spaced about the axis thereof, and a first pair of articulated rods, each of said articulated rods at one end being pivotly connected to a longer shaft of one link plate and at the other end to a shorter shaft of the other link plate, said articulated rods being longer than the radius of the radial extension of the link plates.

4,134,308
DRIVEN MECHANISM FOR A ROTATORY HEAT REGENERATOR

Hiroshi Okano, and Wataru Akai, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Jun. 9, 1977, Ser. No. 805,178
Claims priority, application Japan, Mar. 7, 1977, 52-25179
Int. Cl.[2] F16H *57/00, 55/04, 55/12;* F23L *15/02*
U.S. Cl. 74—411 7 Claims

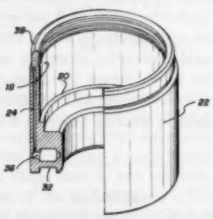


1. A driven mechanism for a rotatory heat regenerator comprising:
an annular shock absorbing member placed around the outer periphery of a discoidal regenerator provided axially with a great number of small perforations;
a metal ring having a corrugation engaging with a plurality of gears for driving and supporting said regenerator and fitted around the outer periphery of said shock absorbing member;
means for engaging said corrugation of said ring with said shock absorbing member; and
means for securing said shock absorbing member around said outer periphery of said regenerator.

4,134,309
FLANGE SPRING RESERVOIR FOR A VIBRATION DAMPER

Rodney W. Balke, Arlington; Frank R. Oradat, Hurst, and Cecil W. Haga, Arlington, all of Tex., assignors to Textron Inc., Providence, R.I.

Filed Nov. 5, 1976, Ser. No. 739,272
Int. Cl.[2] F16F *15/22, 15/04;* F16C *35/00*
U.S. Cl. 74—573 F 16 Claims

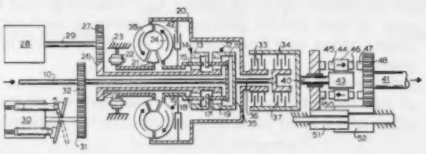


1. A vibration damper for mounting between a rotating shaft and a supporting housing, comprising:
means for rotatably supporting the shaft,
first and second cylindrical members concentrically mounted between the supporting housing and said means with facing inner walls radially displaced to form an annular cavity therebetween,
a flexible support including a radially extending flange having one end connected to said first member and the opposite end connected to said second member, and
an annular reservoir formed by the connection of the flange of said support to said first and second members and opening into the annular cavity therebetween.

4,134,310
HYDROMECHANICAL TRANSMISSION WITH HYDRODYNAMIC DRIVE

Elias Orshansky, Jr., deceased, late of San Francisco, Calif. (by Betty B. Orshansky, executrix), and William E. Weseloh, San Diego, Calif., assignors to Orshansky Transmission Corporation, New York, N.Y.

Filed Apr. 15, 1977, Ser. No. 787,883
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—687 18 Claims

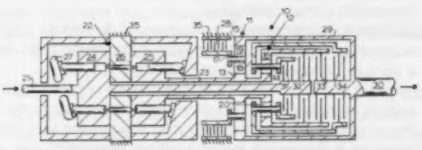


1. A transmission, including in combination:
an input shaft,
a first planetary gear assembly having first input means connected to said input shaft, first output means, and first reaction means,
a second planetary gear assembly having second input means connected to said first input means, second output means, and second reaction means connected directly to said first reaction means by a reaction shaft,
an output shaft,
first clutch means for connecting said first output means to said output shaft in a high driving range,
a hydrodynamic drive connected to said second output means, having an output member connected thereto,
second clutch means for connecting said output member to said output shaft in a low driving range,
a variable-displacement hydraulic unit mechanically connected to said input shaft, and
a fixed-displacement hydraulic unit mechanically connected to said reaction shaft, said hydraulic units being hydraulically connected together so that when one operates as a pump the other acts as a motor, and vice versa.

4,134,311
HYDROMECHANICAL TRANSMISSION WITH TWO PLANETARY ASSEMBLIES THAT ARE CLUTCHABLE TO BOTH THE INPUT AND OUTPUT SHAFTS

Elias Orshansky, Jr., deceased, late of San Francisco, Calif. (by Betty B. Orshansky, executrix), and William E. Weseloh, San Diego, Calif., assignors to Orshansky Transmission Corporation, New York, N.Y.

Filed Jul. 7, 1977, Ser. No. 813,705
Int. Cl.[2] F16H *47/04*
U.S. Cl. 74—687 3 Claims



1. A power transmission comprising:
a stationary frame,
input means,
output means,
first and second planetary assemblies each having a sun gear, a ring gear, and a carrier with planet gears, said sun gears being rigidly connected together, the ring gear of said first planetary assembly being rigidly connected to said output means,

a reversible speed-varying module connecting said input means to said sun gears,

braking means for releasably connecting said carrier of said first planetary assembly to said frame, whereby when said braking means is engaged, said output means is driven from said input means through said speed-varying module and said first planetary assembly,

first releasable clutching means for connecting said input means to said carrier of said second planetary assembly,

second releasable clutching means for connecting said input means to said ring gear of said second planetary assembly,

third releasable clutching means for connecting said ring gear of said second planetary assembly to said output means, when said first releasable clutching means is engaged, and

fourth releasable clutching means for connecting said carrier of said second planetary assembly to said output means when said second releasable clutch means is engaged.

4,134,312

CONTROL SYSTEM FOR AN AUTOMATIC POWER TRANSMISSION

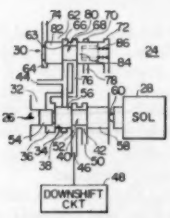
Tetsuya Iijima, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 23, 1976, Ser. No. 753,794

Claims priority, application Japan, Dec. 27, 1975, 50-157066

Int. Cl.[2] B60K *41/18*

U.S. Cl. 74—865 **14 Claims**



1. A control system for an automatic power transmission of a vehicle driven by an engine the output of which is controlled by the degree of opening of a throttle valve operatively connected to an accelerator pedal, said transmission including a downshift circuit into which hydraulic fluid from a source of fluid under pressure is introducible for downshifting the transmission to the next lower vehicle speed gear ratio, said control system comprising:

a kickdown switch connected to said accelerator pedal in such a manner that said switch is actuated when said accelerator pedal is fully depressed;

a downshift valve having first and second positions, said first position being a position in which fluid communication is established between said source of fluid and said downshift circuit, said second position being a position in which fluid communication between said source of fluid and said downshift circuit is blocked;

cancelling passage means for causing said downshift valve to assume said second position when a hydraulic fluid under a certain pressure is present therein;

an electric actuator actuated by the closing of said kickdown switch, which causes said downshift valve to assume said first position, even when hydraulic fluid under said certain pressure is present in said cancelling passage means; and

a position holding valve which is in contact with a source of throttle pressure, and in response to changes in the magnitude thereof assumes a first position when said throttle pressure is above a predetermined level which blocks fluid flow in said cancelling passage means and which thereby holds said downshift valve in its first position wherein fluid flow between said source of fluid and said downshift circuit is opened, and a second position when said throttle pressure is below a predetermined level which opens fluid flow in said cancelling passage means and which thereby urges said downshift valve into its second position wherein fluid flow between said source of fluid and said downshift circuit is blocked.

4,134,313

AUTOMATIC TRANSMISSION FOR AUTOMOBILES

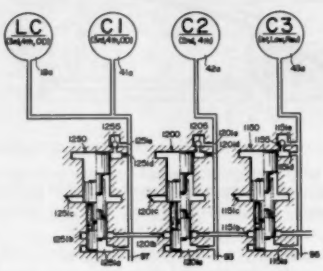
Kazuo Ishikawa, Ichinomiya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed May 6, 1977, Ser. No. 794,632

Claims priority, application Japan, May 11, 1976, 51-54020; May 11, 1976, 51-54022

Int. Cl.[2] B60K *41/06*

U.S. Cl. 74—867 **6 Claims**



1. An automatic transmission for automobiles which comprises gear means having at least one frictional constraining means adapted for selective operation to provide a plurality of different speed ratios including an over-drive stage, actuator means associated with said constraining means, control circuit means including at least one hydraulic pressure line for said actuator means to provide a supply of operating pressure to said actuator means and further at least one return line, an over-drive shift valve means associated with said actuator means and disposed between said hydraulic pressure line and said return line and including at least one spool valve member biased toward a first position wherein the hydraulic pressure line is blocked from communication with the return line, and means for applying a force to the spool valve member to be urged under such a force toward a second position wherein the pressure line is opened to the return line so that the actuator means for the over-drive stage is not operated, said force applying means including a hydraulic chamber means disposed in a valve bore of said over-drive shift valve means in which a spring is disposed to urge the spool valve member toward said second position, said hydraulic chamber means being connected with control valve means for controlling a supply of hydraulic pressure to said hydraulic chamber means and to means for determining a starting point of a kick-down operation.

4,134,314

METHOD FOR TRUING RAILROAD CAR WHEELS

Max Luzina, Erkelenz, Fed. Rep. of Germany, assignor to W. Hegenscheidt Gesellschaft mit beschraenkter Haftung, Erkelenz, Fed. Rep. of Germany

Filed Feb. 28, 1977, Ser. No. 772,950

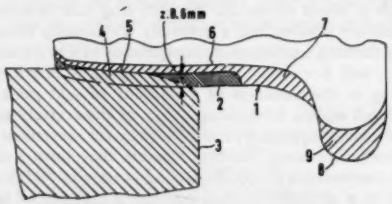
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608940

Int. Cl.[2] B23B *1/00, 5/32*

U.S. Cl. 82—1 C **2 Claims**

1. In a method for reprofiling the wheels of railroad wheel sets by machining of the wheel profile surface formed by the tread surface and the flange surface of the wheels of a wheel set, on a turning machine, wherein each wheel is frictionally driven at the profile surface in a force transmitting manner by spaced roller means holding the wheel, the improvement com-

prising the steps of first cutting over a portion of the width of the tread surface of each wheel of a set to a respective cutting depth smaller than the cutting depth required for restoring the profile surface, then determining the diameters of the cut-over portions of the wheels of a set and comparing these diameters with each other, then advancing a first turning tool assigned to the wheel profile surface with the smaller diameter to the



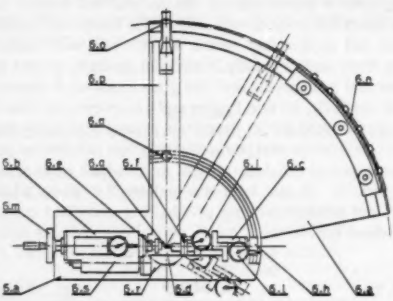
cutting depth required for the final reprofiling, and advancing the second turning tool assigned to the wheel profile surface with the larger diameter to the same cutting depth, and additionally advancing said second turning tool by half the amount of the diameter difference, said steps being performed prior to restoring the final profile contour in one cutting operation by the turning tools.

4,134,315

LATHE FOR MAKING CONTACT LENSES

Alberto Bendini, via Vivaldi 18, Brescia, Italy

Filed May 5, 1977, Ser. No. 793,943
Claims priority, application Italy, May 5, 1976, 5156 A/76
Int. Cl.[2] B23B *3/28, 5/40*
U.S. Cl. 82—14 R **4 Claims**



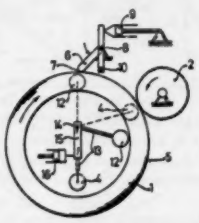
1. A lathe for forming, in a single cut, successions of spherical and anaspherical surfaces that are either concave or convex and contiguous concave or convex spherical surfaces of different radii, said lathe including a tool holder turret having a rotatable vertical shaft that is not directly and rigidly supported by the base of the machine and a lens holder having a spindle, said lathe comprising a square support for hingedly mounting the tool holder turret on a horizontal face thereof, said square support being arranged to rotate about an axis that is perpendicular to a vertical face thereof, and therefore perpendicular to the rotational axis of the turret but not in the same plane thereof, the rotational axis of said square support being in a plane containing the axis of the lens holder spindle and parallel and spaced at the smallest distance other than zero from the axis of the lens holder spindle which axis is in a plane that is parallel to the horizontal rest plane of said lathe, a lever arm extending from the tool holder turret and perpendicular to the rotational axis thereof, first and second rollers supported by said lever arm, said first and second rollers having their axes perpendicular to the axis of rotation of the turret, said first roller being positioned at the end of said lever arm that is remote from the tool holder turret, said second roller being positioned intermediate said first roller and the axis of rotation of the turret and a circular cam having a rising profile on which said first roller rides.

4,134,316

APPARATUS FOR CUTTING TIRE CARCASSES INTO INDIVIDUAL ANNULAR ELEMENTS

Walter Bullinger, Niederhoferstr. 32-36, 725 Leonberg-Eltingen, Fed. Rep. of Germany

Filed Feb. 15, 1977, Ser. No. 768,818
Int. Cl.[2] B23B *5/14*
U.S. Cl. 82—56 **6 Claims**



1. Apparatus for cutting tire carcasses into a plurality of annular sections comprising, in combination, a rotatable annular body supported adjacent the outer periphery of the tire carcass, means for rotating said annular body, a cutting knife supported adjacent the outer periphery of the tire carcass in circumferentially spaced relationship with said annular body, means for yieldingly urging said cutting knife into cutting engagement with the tire carcass, freely rotatable first and second roller means, means for supporting said first and second roller means in radially disposed, angularly displaced, relationship within the interior of the tire carcass, means for yieldingly moving said supporting means together with said first and second roller means between an inoperative position with said first and second roller means in spaced-apart relationship with the inner periphery of the tire carcass and an operative position with said first and second roller means in rolling engagement with the inner periphery of the tire carcass opposite said cutting knife and said annular body respectively, whereby the tire carasss is rotated during the rotation of said annular body and through the clamping engagement of the tire carcass between said annular body and second roller means and whereby said first roller means provides an abutment means for said cutting knife in cutting engagement with the tire carcass.

4,134,317

METHOD AND APPARATUS FOR FABRICATING VENT PLATE HAVING BOW-TIE SLOT ARRANGEMENT

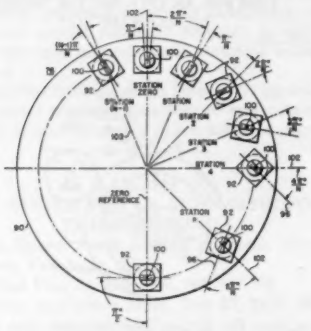
Rajeshwar P. Goel, Monroeville; Terry L. Vota, Elizabeth, and Thomas J. Lynch, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 661,076, Feb. 25, 1976, Pat. No. 4,061,937.
This application Aug. 25, 1977, Ser. No. 827,766
Int. Cl.[2] B26F *1/04;* B26D *5/30*
U.S. Cl. 83—35 **6 Claims**

5. A method of forming a slot in a vent plate by means of a machine tool having a press table for holding said vent plate, means for controlling the position of said press table along respective X and Y axes of said machine tool, and having a plurality N, N being a positive integer, of substantially identical punch tools disposed in an ordered array of N stations, the penetrating portion of each said punch tool being characterized by a bow-tie outline, in cross-section, and being defined by intersecting planar and curved side surfaces, said curved side surfaces being an arc measuring substantially π/N radians, the penetrating portion having a principal axis of symmetry, the axis of symmetry of the punch tool of the nth station, n being

a positive integer less than or equal to N, being angularly displaced by $n\pi/N$ radians with respect to a selected one of the axes of said rectangular coordinate reference system as measured when said nth punch tool is placed in punching position, said slot being adapted to receive a rivet having a rectangular cross-section, the longitudinal axis of said rivet, when inserted in said slot, being aligned along a line which is obliquely inclined with respect to the axes of a selected rectangular coordinate reference system, comprising:

securing the vent plate to the press table;



moving said press table to position said vent plate to receive a punch at a predetermined punch location;

measuring the angle of inclination of the radial line drawn from the origin of curvature of said vent plate through said predetermined punch location;

selecting and placing in operating position the nth punch tool having the slot orientation range of $(n\pi/N \pm \pi/2N)$ radians which includes said angle of inclination of said radial line; and,

punching said vent plate at said predetermined punch location with said selected punch tool.

4,134,318

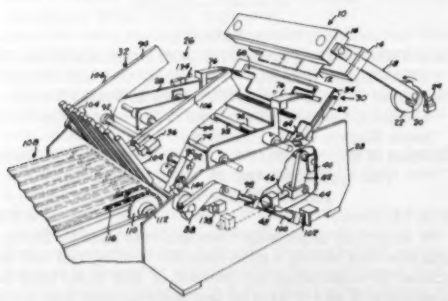
GRID STACKING ARRANGEMENT FOR A BATTERY GRID CASTING MACHINE

Robert R. Rader, Port Huron, Mich., and Ray Schenk, Inverness, Ill., assignors to Wirtz Manufacturing Company, Inc., Port Huron, Mich., a part interest

Filed Jun. 16, 1977, Ser. No. 807,293

Int. Cl.[2] H01M *35/08;* B26D *7/06*

U.S. Cl. 83—91 **6 Claims**



1. In a battery grid casting machine the combination comprising, a die for trimming a cast grid to the desired shape and size, the grid being of the type having a pair of lugs thereon projecting one from each side thereof by means of which the grids are adapted to be suspended from a pair of laterally spaced rails, a grid stacker assembly on said machine adapted to receive the grids one at a time from the trim die, said stacker assembly having a grid stacker plate thereon which is supported for movement in an arcuate path from a grid receiving position wherein the stacker plate is inclined to the vertical to a grid delivery position wherein the stacker plate and the grid thereon are disposed generally vertically, a rail assembly on said machine comprising first and second rail sections disposed in end to end relation, the first rail section comprising a pair of tranversely spaced rails fixedly mounted on the machine and having an arcuate portion generally coextensive with the arcuate path of travel of the stacker plate from said receiving to said delivery position and a generally horizontally extending portion forming a downstream continuation of said arcuate rail portion, said horizontal rail portion having a length corresponding to the thickness of a plurality of said grids, said second rail section comprising a pair of transversely spaced rails pivotably supported on said machine for movement from a generally horizontal position wherein they form a downstream continuation of said horizontal portion of said first rail section to a generally vertical position, a plurality of spaced fingers fixed to the downstream end of said pivoted rails and projecting generally perpendicular thereto and thereabove when the pivoted rails are disposed in said generally horizontally disposed position, said fingers being disposed generally horizontally when said pivoted rails are vertically disposed, means for pivoting the stacker plate from said receiving position to said delivery position in timed relation to the operation of the trim die so that the stacker plate transfers grids one at a time from said trim die onto the horizontal portion of said first rail section whereby, in response to continued operation of said stacker plate, the grids are progressively advanced from the horizontal portion of said first rail section onto the second rail section, a pusher member responsive to the accumulation of a predetermined number of grids on the horizontal portion of said first rail section and on said second rail section for displacing all of said accumulated grids downstream so that the leading grid is positioned adjacent said fingers and the endmost trailing grid is positioned on the second rail section downstream from the downstream end of the horizontal portion of the first rail section and means for pivoting said second rail section from said generally horizontal position to said generally vertical position so that the grids suspended thereon are stacked vertically on said fingers and a conveyor on which said grids are adapted to be deposited in said vertically stacked position, said horizontal portion of said first rail section providing a storage rail for a plurality of grids which enables continued operation of said trim die and stacker plate while the second rail section is being pivoted between said horizontal and vertical positions.

4,134,319

ROTARY PUNCHING APPARATUS

Derek J. Clark, Crawley, England, assignor to Racal-Zonal Limited, England

Continuation-in-part of Ser. No. 640,172, Dec. 12, 1975. This application Nov. 3, 1977, Ser. No. 848,158

Int. Cl.[2] B26F *1/08*

U.S. Cl. 83—100 **18 Claims**

1. In apparatus for punching apertures in an elongate flat flexible member,

a ring rotatably mounted about its longitudinal axis,

punch means spaced about the ring and mounted for linear movement substantially radially of the ring,

a generally annular rotary member mounted concentrically of and spaced inwardly of the ring to form a space for receiving the elongate flat flexible member,

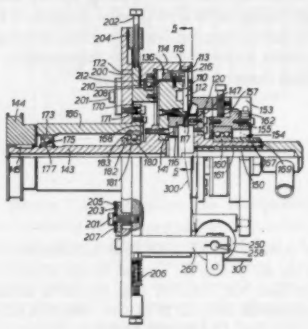
die means supported by the annular rotary member and arranged to receive operative portions of the punch means,

a rotary drive ring for driving the punch means mounted outwardly of the punch means carrying ring and eccentrically with respect to said ring and to the generally annular member, said drive ring serving to drive said punch means

into the die means to punch the flexible member at a punching zone,

drive means to drive positively the punch means carrying ring and the annular member,

first guide means to guide the elongate flat flexible member into said space at a location at which the punch means are free of the die means, the first guide means being arranged to receive the flexible member when it is orientated in space at an angle to the line of initial contact of the flexible



member with the annular rotary member, said first guide means being so disposed that the flexible member is progressively twisted over its path from the guide means to said line of contact where said angle is reduced to zero, and

second guide means arranged to lead the flexible member away from the annular rotary member by progressively twisting the member over its path from the line of departure from the annular rotary member to the line of contact with the guide member.

4,134,320

KEY ASSIGNER FOR USE IN ELECTRONIC MUSICAL INSTRUMENT

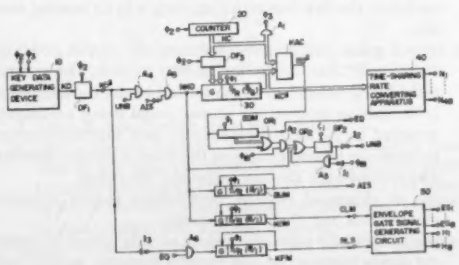
Akiyoshi Oya, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Aug. 19, 1975, Ser. No. 605,957

Claims priority, application Japan, Aug. 19, 1974, 49/94747; Sep. 4, 1974, 49/101734; Sep. 6, 1974, 49/102639

Int. Cl.² G10H *1/00*

U.S. Cl. 84—1.01 **8 Claims**



1. A key assigner for use in an electronic musical instrument, comprising first means for generating first time division multiplexed information representing depressed keys, and second means for converting said first time division multiplexed information into second time division multiplexed information at a time division rate which is slower than that at which said first time division multiplexed information is generated.

4,134,321

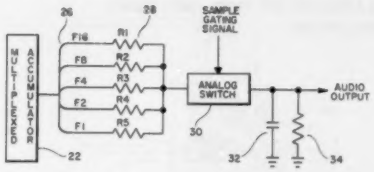
DEMULTIPLEXING AUDIO WAVESHAPE GENERATOR

Robert P. Woron, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Apr. 14, 1977, Ser. No. 787,696

Int. Cl.² G10H *1/00, 5/00*

U.S. Cl. 84—1.22 **11 Claims**



1. In a method of generating an audio waveshape wherein octavely related multiplexed frequency signals are generated by a multiplexed accumulator in respect to a preselected number of waveshape generator channels and wherein a sample gating signal is generated to select at least one of said channels, the steps of:

weighting each of said plural multiplexed octavely related frequency signals,

selectively combining the plural weighted frequency signals in response to said sample gating signal, and

smoothing the combined weighted frequency signals.

4,134,322

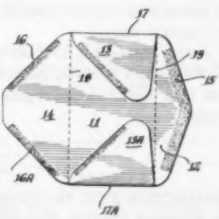
USE OF MICROENCAPSULATED GLUE IN THE MANUFACTURE OF ENVELOPES

Harold R. Lillibridge, San Mateo, Calif., assignor to Champion International Corporation, Stamford, Conn.

Filed Jun. 27, 1977, Ser. No. 810,264

Int. Cl.² B31B *19/60*

U.S. Cl. 93—61 R **4 Claims**



1. In a process for manufacturing envelopes comprising applying a remoistenable seal gum to the lid thereof and applying a back gum thereof to the side or bottom flaps, drying the seal gum and applying pressure to fold the side and bottom flaps so as to cause adhesion therebetween, the improvement which comprises applying substantially simultaneously said back gum in the form of microcapsules contained in said gum, the microcapsules being subject to rupture at a pressure above about 5 psi, and said seal gum.

4,134,323

SPATIALLY SEPARATED TONAL EFFECTS FOR AN ELECTRONIC MUSICAL INSTRUMENT

Jerome Markowitz, Allentown, Pa., assignor to Allen Organ Company, Macungie, Pa.

Filed Jun. 8, 1977, Ser. No. 804,573

Int. Cl.² G10H *1/02*

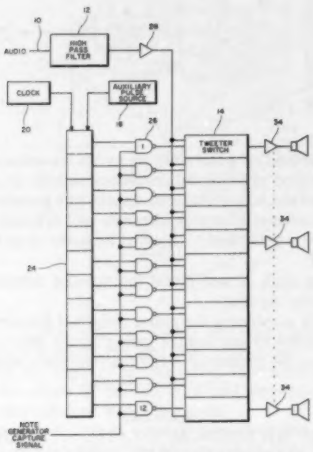
U.S. Cl. 84—1.27 **7 Claims**

1. In a multiplexed electronic musical instrument having less

note generators than switches selectively actuable to cause the production of a common full range audio signal by said note generators and a note generator capture signal to indicate that a note generator channel has been captured by a switch, an apparatus for producing spatially separate tonal effects corresponding to the pattern of capture of said note generator channels, comprising:

a filter means for filtering out the undesired audio frequencies from said full range audio signal,

clocking means,



demultiplexing means responsive to said note generator capture signal and said clocking means for producing plural pulsed control signals based on said pattern of capture of said note generator channels,

plural switching means for individually accepting the common audio output signal of said filter means and for selectively passing said audio output signal in response to said pulsed control signals, and

plural speaker means connected to said plural switching means for producing said spatially generated tonal effects in response to said audio output signal passed by said switching means.

4,134,324

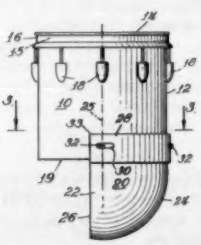
SOUND PROJECTOR FOR MUSICAL DRUMS

Alfred J. LeMert, Prospect Heights, Ill., assignor to Ludwig Industries, Chicago, Ill.

Filed Mar. 6, 1978, Ser. No. 883,463

Int. Cl.[2] G10D *13/02*

U.S. Cl. 84—411 R **6 Claims**



1. A musical drum comprising

a generally cylindrical shell defining a resonant cavity having an axial center line,

said shell having upper and lower openings at opposite ends thereof,

a vibratable drum head covering said upper opening,

and a sound projecting means positioned adjacent the lower opening and comprising approximately one-half of a hemisphere of a size approximately one-half of the vertical height of said shell,

said half hemisphere including curved walls with openings at approximately 90° from each other,

the curved walls adjacent one opening of the half hemisphere conforming with a peripheral portion of the shell adjacent the lower opening with the other opening in said half hemisphere disposed in a plane substantially parallel with the axial center line of said shell.

4,134,325

DRUM AND PEDAL BEATER ASSEMBLY

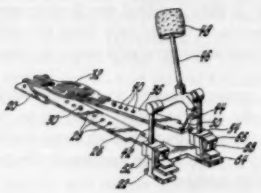
Michael E. Loftus, 8271 Huron, Taylor, Mich. 48180

Continuation of Ser. No. 718,379, Aug. 27, 1976, abandoned.

This application May 3, 1978, Ser. No. 902,727

Int. Cl.[2] G10D *13/00*

U.S. Cl. 84—422 R **1 Claim**



1. A drum and pedal assembly, comprising:

a drum having a circular rim;

first base means;

a first beater mounted on the first base means for engaging the drum in a beating motion;

second base means;

a second beater mounted on the second base means for engaging the drum in a beating motion, independent of the motion of the first beater;

a first pedal, and means connecting the first pedal to the first base means for pivotal motion, the first pedal being connected to the first beater for moving it in its beating motion;

a second pedal, and means connecting the second pedal to the second base means for pivotal motion, the second pedal being connected to the second beater for moving it in its beating motion, the second pedal being adjustably mounted on the second base means such that the distance between the second pedal and the drum is greater than the distance between the first pedal and the drum;

a pair of elongated vertical, horizontally spaced supports mounted on one of said base means;

a pair of vertically adjustable independently movable clamping means mounted on said vertical supports, each of said clamping means being connected to the drum rim;

means connecting the other of said base means to the drum rim;

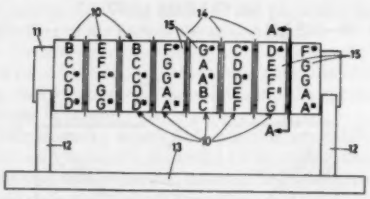
Whereby the user can dispose the toe of his foot on the first pedal and the heel of his foot in either a position spaced from the second pedal, or in a position on the second pedal to move the first beater and the second beater with the same foot.

4,134,326

DEVICE FOR COMPUTING MUSICAL RELATIONSHIPS

Peter G. Hutton, 30 Darlinghurst Rd., Sydney, Australia

Filed Feb. 25, 1977, Ser. No. 771,971
Claims priority, application New Zealand, Feb. 25, 1976, 180119
Int. Cl.[2] G09B *15/02*
U.S. Cl. 84—474 6 Claims



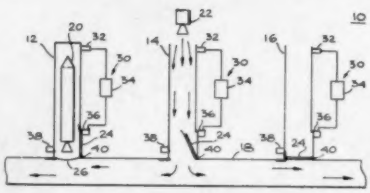
1. A device for computing the transposition of musical chords comprising an axle; a number of annular rings rotatably mounted on said axle, the peripheral surface of each ring having printed thereon indicia representing the successive notes of the chromatic scale: a base member with a pair of spaced apart uprights, said uprights having curved indents at the upper ends thereof in which said axle engages to be supported above said base; a plurality of separating discs, of greater diameter than said annular rings, mounted on and coaxial with said axle, there being a separating disc located between each adjacent pair of annular rings; and a viewing screen mounted on said uprights, said viewing screen being of a length to extend over all the rings and having an elongate opening through which a series of aligned indicia on adjacent rings can be viewed, sid annular rings being movable to positions relative to each other at a plurality of positions to indicate relationships which include chord indication and transposition.

4,134,327

ROCKET LAUNCHER TUBE POST-LAUNCH REAR CLOSURE

Edward T. Piesik, Pomona, Calif., assignor to General Dynamics Corporation, Pomona, Calif.

Filed Dec. 12, 1977, Ser. No. 860,039
Int. Cl.[2] F14F *3/04*
U.S. Cl. 89—1.8 14 Claims



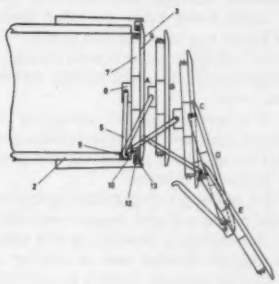
1. Launch tube closure apparatus comprising:
a door pivotably mounted at the bottom of a missile launch tube at the junction thereof with an associated plenum chamber for closing off the launch tube from the plenum chamber, the door being pivoted for movement between a stowed position and a closed position;
means for stowing the door recessed into the wall of the launch tube;
first latching means for retaining the door in the stowed position;
second latching means for locking the door in the closed position; and
means responsive to the movement of the missile during launching from the launch tube for releasing the first latching means to permit the door to move from the stowed position to the closed position.

4,134,328

DEVICE FOR A MISSILE

Börje Asp, and John-Erik Martinsson, both of Karlskoga, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 22, 1977, Ser. No. 770,341
Claims priority, application Sweden, Aug. 25, 1975, 7509416
Int. Cl.[2] F41F *3/04*
U.S. Cl. 89—1.817 7 Claims



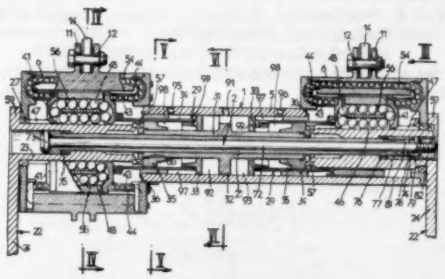
1. Launch support apparatus for a gas powered missile device, said apparatus comprising:
a cylindrically shaped, hollow launch tube including first and second open end portions;
a front cover detachably enclosing said first end portion of said tube; and
means including a rear cover detachably engaging the launch tube for directing a pressure wave generated by said device against said front cover to separate said front cover from said tube and thereby prevent direct contact between said front cover and said device as said device exits through said first opening.

4,134,329

CONTROL DEVICES HAVING PIVOTAL OUTPUT ELEMENTS DRIVEN BY MEANS OF JACKS

Pierre Belliere, Figeac, France, assignor to Ratier Figeac, Figeac, France

Filed Feb. 23, 1977, Ser. No. 771,089
Claims priority, application France, Mar. 9, 1976, 76 06636
Int. Cl.[2] F01B *3/00*
U.S. Cl. 92—70 1 Claim



1. A pressure fluid actuated control device comprising:
a stationary outer longitudinal elongated tubular member;
a pivotal inner longitudinal elongated member coaxially arranged for pivotal movement in said stationary outer longitudinal elongated member;
two stationary elements respectively secured to the ends of said stationary outer longitudinal elongated tubular member;
two pivotal elements respectively secured to the ends of said pivotal inner longitudinal elongated member;

two longitudinal annular double acting pressure fluid jacks formed end to end between said stationary outer longitudinal elongated tubular member and said pivotal inner longitudinal elongated member, said jacks having a common median bottom located mid-way in said stationary outer longitudinal elongated tubular member, annularly slotted cylinder-heads remote from each other, annular pistons and tubular piston rods slidably engaged in leak-tight manner through said annularly slotted cylinder-heads, radial bores being provided through each said tubular piston rod adjacent said piston;

pressure fluid entrance and exit ports through said stationary outer longitudinal elongated tubular member for controlling said jacks;

a first set of cooperating guides operatively connecting each said piston rod and the corresponding said stationary elements for angularly positioning said piston rod relative to said stationary element;

a second set of cooperating guides operatively connecting each said piston rod and the corresponding said pivotal element for angularly positioning said piston rod relative to said pivotal element; said second set of cooperating guides forming an angle relative to said first set of cooperating guides; and

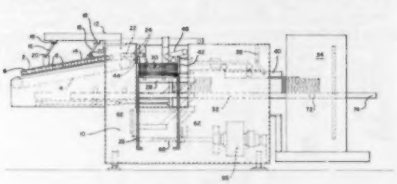
a tubular slide block slidably mounted around each said pivotal element and secured to the corresponding said tubular piston rod, said tubular slide block having two diametrically opposed longitudinal tongues arranged in a common longitudinal middle plane and having two lateral guides, each said stationary element having an inner longitudinal complementary guide facing each of said lateral guides of said tongues, said second set of cooperating guides comprising two longitudinal rows of balls diametrically arranged between said pivotal element and said tubular slide block and a ball recycling circuit in said tubular slide block facing each said two longitudinal rows of balls, said first set of cooperating guides comprising on each side of each said recycling circuits a further longitudinal row of balls interposed between each said lateral guide of each said tongue and the corresponding complementary inner guide of the corresponding said stationary element and a further ball recycling circuit associated with each of said further four rows of balls and arranged in said stationary element in a plane near a plane parallel with said common longitudinal plane of said two tongues.

4,134,330

METHOD AND APPARATUS FOR STACKING BLANKS

Kurt K. Weickenmeier, Reinheim, Germany, assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Oct. 26, 1977, Ser. No. 845,627
Int. Cl.[2] B31B *1/98*; B65B *57/20*; B65G *57/02*; B65H *33/06*
U.S. Cl. 93—93 M **8 Claims**



1. A method of stacking a predetermined number of flat folded, glued box blanks comprising the steps of:

(a) moving said blanks on a conveyor means in their folded condition past a counter-register to a support table,

(b) counting said blanks as they pass said counter-register,

(c) deflecting the next following blank laterally after a predetermined number of blanks have been counted and accumulated on said stacking table, and

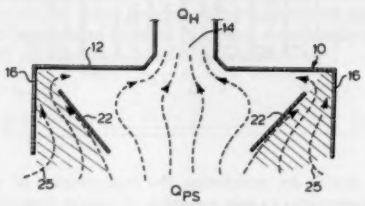
(d) supporting said deflected blank by secondary support means while said predetermined number of blanks are being ejected from said stacking table.

4,134,331

CANOPY HOODS

Manfred Bender, Mississauga, Canada, assignor to Powlesland Engineering Limited, Rexdale, Canada

Filed May 31, 1977, Ser. No. 801,570
Int. Cl.[2] F23J *11/00*
U.S. Cl. 98—115 LH **7 Claims**



1. A fume hood which comprises:

an upper wall,

a suction opening in said upper wall,

fan means for withdrawing gas upwardly through said suction opening,

side walls extending generally downwardly from edges of said upper wall, thereby to define with said upper wall a space enclosed on all sides but the under side,

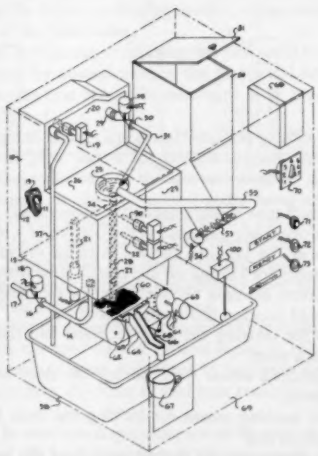
and baffle plates substantially within said space, said baffle plates sloping upwardly and outwardly with respect to the part of said space under said suction opening, the plates surrounding said part and at least some plates having their upper edges spaced from the walls defining said space, the plates defining between them a central passageway through which gas can pass to said suction opening.

4,134,332

CONTINUOUS BEVERAGE BREWER

Richard J. Merman, 5472 Vicaris St., Philadelphia, Pa. 19128

Continuation-in-part of Ser. No. 764,326, Jan. 31, 1977, abandoned. This application Dec. 16, 1977, Ser. No. 861,273
Int. Cl.[2] A47J *31/00, 31/06*
U.S. Cl. 99—289 T **11 Claims**



1. A continuous brewer for producing a beverage suitable for human consumption, said brewer comprising:

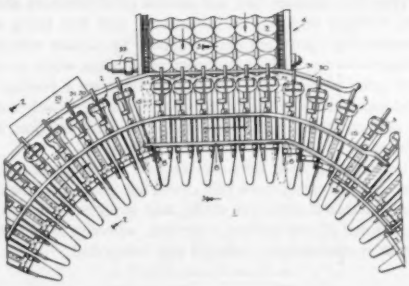
(a) a mixing duct for mixing a liquid and a particulate beverage ingredient and for brewing the beverage, said duct including an inlet adjacent one end for receiving the liquid and the beverage ingredient to mix them together, an outlet for delivering the brewed beverage and spent beverage ingredient and an elongate brewing zone intermediate the inlet and outlet through which the mixed liquid and beverage ingredient continuously move;
(b) means for delivering the liquid and particulate beverage ingredient to the inlet of the mixing duct;
(c) a movable filter intercepting the flow of brewed liquid and spent beverage ingredient from the outlet of the mixing duct for collecting the spent material and passing the brewed beverage;
(d) filter mounting means for permitting movement of the filter with respect to the outlet of the mixing duct at the same time that the brewed beverage and spent material are being delivered through the outlet;
(e) drive means for moving the filter relative to the outlet of the mixing duct;
(f) control means for actuating the drive means at the same time that the brewed beverage and spent beverage ingredient are being delivered through the mixing duct outlet to move the filter with respect to the oulet and thereby remove spent beverage ingredient and present a fresh filter surface for receiving the brewed beverage; and
(g) means for receiving and dispensing the brewed and filtered beverage after passage through the filter.

4,134,333

METHOD AND MEANS FOR TRANSFERRING ROWS OF ARTICLES

William H. Warren, Omaha, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.

Filed May 26, 1976, Ser. No. 689,999
Int. Cl.[2] A01J *11/00*
U.S. Cl. 99—498 **9 Claims**



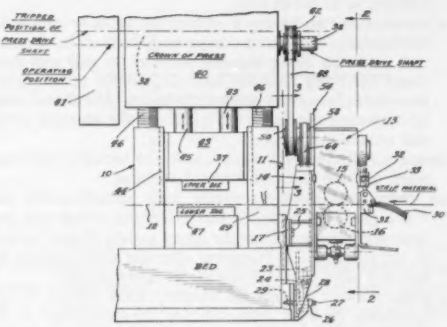
1. In an egg processing means having processing heads mounted in a circle on a circular turret for rotation around a central turret support improved means for feeding a straight row of eggs to a number of adjacent heads on the turret comprising:
Means for pivotally and slidably mounting the processing heads on said turret;
Means for normally holding said processing heads in a radial alignment; and
adjusting means for temporarily moving the heads of said number of adjacent heads into a straight line by imparting swinging and sliding motion to the heads so that a desired number of said heads are placed in a straight line to receive said eggs from said means for feeding

4,134,334

AUTOMATED LOCK DEVICE FOR PRESS FEED BELT DRIVES

Kenneth C. Johnson, Des Plaines, Ill., assignor to F. J. Littell Machine Company, Chicago, Ill.

Filed Sep. 19, 1977, Ser. No. 834,168
Int. Cl.[2] B30B *15/14*
U.S. Cl. 100—48 **7 Claims**



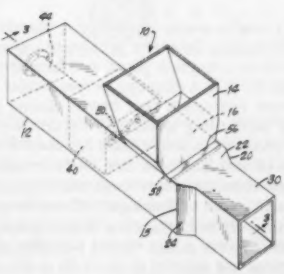
1. In press feeding mechanism for feeding strip material, in combination with the crank drive shaft of a press, of a gear and cam housing having an adjustable securement to a wall of the press in associated relation to the crank drive shaft, said gear and cam housing journalling a feed roll and having an input drive shaft for driving the feed roll, a swing plate mounted on the input drive shaft for limited rotative adjusting movement around said drive drive shaft as an axis, pressure cylinder means for releasably locking the swing plate to a wall of the gear and cam housing, an elbow arrangement provided by the swing plate and including a pair of timing sprockets in spaced parallel relation and carried by the swing plate in a manner permitting rotation as a unit, a flexible belt drive operatively connecting the press crank shaft with one of the timing sprockets, and a second timing belt operatively connecting the other timing sprocket with the input drive shaft.

4,134,335

WASTE COMPACTING APPARATUS

James O'Rourke, Waldwick, N.J., and Murray Feldberg, Brooklyn, N.Y., assignors to Multi-Pak Corporation, Hackensack, N.J.

Continuation of Ser. No. 626,268, Oct. 28, 1975, abandoned. This application Jan. 9, 1978, Ser. No. 867,934
Int. Cl.[2] B30B *15/08*
U.S. Cl. 100—98 R **3 Claims**



1. A waste compacting apparatus which comprises:
an elongated waste receiving chamber of generally rectangular cross section, said chamber having a waste inlet opening intermediate the chamber ends and a waste outlet opening at the forward end thereof;

a size reduction chamber of decreasing rectangular cross section affixed at its rear end to said waste outlet opening, said size reduction chamber having a first opposite pair of parallel walls and a second opposite pair of walls tapering inwardly toward the far end of said size reduction chamber; an elongated outlet snout of rectangular cross section equal to that of the far end of said size reduction chamber, said outlet snout having its near-end affixed to the far end of said size reduction chamber and having a discharge opening at its outlet end;

a compaction ram having a rectangular cross section and a substantially flat waste-compacting face at its forward end, said ram being slidably mounted in said elongated waste receiving chamber and adapted for reciprocating movement between a rearward position behind said waste inlet opening and a forward position at the near end of said size reduction chamber;

means for driving said compaction ram between said rearward position and said forward position;

an upper straight-edge shearing knife affixed within said waste receiving chamber and extending across and projecting downwards from the upper surface thereof normal to the sides of said receiving chamber and adjacent the forward edge of said waste outlet opening; and

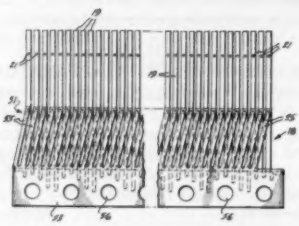
a unitary lower vee-shaped shearing knife affixed to and extending forward from the top forward edge of the waste-compacting face of said compacting ram with the central vee tip thereof pointing rearwardly and being in the same plane as the center line of said compaction ram's upper surface and of said drive means, said lower shearing knife slidably contacting said upper shearing knife as said ram is driven forward toward said waste inlet opening.

4,134,336

HALF-HERRINGBONE SUPPORT FOR RESTRICTING SIDEWAYS VIBRATION OF COMB HAMMERS

Edward D. Bringhurst, Seattle, Wash., assignor to Tally Corporation, Kent, Wash.

Filed Mar. 21, 1977, Ser. No. 779,364
Int. Cl.² B41J *5/12*
U.S. Cl. 101—93.04 **4 Claims**



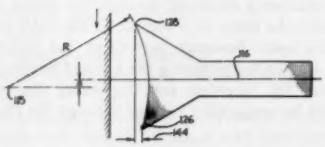
1. In a dot matrix printer including a plurality of closely spaced, dot imprinting hammers projecting outwardly from a base so as to lie in a common plane, said hammers being oscillated back and forth in a direction perpendicular to the direction of hammer movement that occurs during printing, the improvement comprising a half-herringbone support for decreasing the vibratory motion of said hammers in the direction of oscillation of said hammers, said half-herringbone support comprising an elongate planar base and a plurality of tines integrally formed with said elongate planar base of said half-herringbone support and projecting obliquely outwardly from one of the longitudinal edges of said elongate planar base of said half-herringbone support so as to lie in the plane of said elongate planar base of said half-herringbone support, said elongate planar base of said half-herringbone support attached to the base from which said plurality of hammers project such that the plane of said hammers and the plane defined by said elongate planar base of said half-herringbone support and said plurality of tines of said half-herringbone support are juxtaposed, said half-herringbone support positioned such that each of said plurality of tines overlie one or more of said plurality of hammers and such that the outer tip of each of said tines intersects an associated hammer at a point intermediate the ends of said associated hammer, said outer tips of said tines being permanently affixed to their associated hammers at the points of intersection, the portion of said tines lying between the base of said half-herringbone support and the tips of said tines being undercut on the side of said tines facing said hammers so as to prevent rubbing between said tines and the hammers over which said tines pass but to which said tines are not permanently affixed.

4,134,337

CONCAVE IMPACT PRINT HAMMERS

Aram S. Arzoumanian, Encino, Calif., assignor to Dataproducts Corporation, Woodland Hills, Calif.

Filed Jun. 10, 1977, Ser. No. 805,337
Int. Cl.² B41J *9/12*
U.S. Cl. 101—93.09 **5 Claims**



1. In a band printer employing a moving type font moving in a substantially straight direction and employing at least one multiple-type spanning impact hammer having a tip surface, an improvement comprising:

a concave curvature formed into said tip surface, said hammer having a centerline plane of symmetry, said tip surface having an inherent resiliency, the axis of curvature of said tip lying in said centerline plane, said axis of curvature being substantially orthogonal to said straight direction of movement of said moving type font, and wherein:

said type font assumes first and second print positions along said straight direction of movement, said font being impactable by a portion of said hammer tip surface which is situated on one side of said centerline plane when in said first print position and being impactable by a portion of said hammer tip surface which is situated on the other side of said centerline plane when in said second position, and wherein:

the locations of said first and second print positions are respectively offset from said centerline plane by different predetermined distances along said straight direction of movement of said moving type font, whereby print image smear is substantially reduced and controlled.

4,134,338

STENCIL EJECTOR

Thomas G. Selman, London, England, assignor to Gestetner Limited, London, England

Filed Dec. 2, 1976, Ser. No. 746,715
Claims priority, application United Kingdom, Oct. 27, 1976, 3094/76
Int. Cl.² B41F *15/08, 15/34*
U.S. Cl. 101—122 **12 Claims**

1. A stencil duplicator comprising a rotary surface upon which stencils are to be positioned, a clamp on the surface for clamping stencil heads upon the surface, means for driving said rotary surface in a print direction at a printing speed and stencil ejection apparatus, said stencil ejection apparatus including:

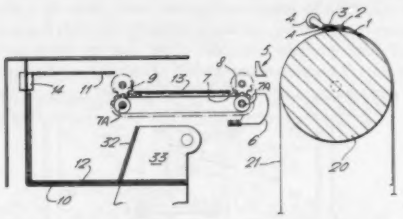
(a) a mechanism operable to release the clamp during rota-

tion of the surface, whereby the head of a stencil on the surface will be raised therefrom;

(b) circulatory drive members so positioned adjacent the surface as to receive a so raised stencil head between them upon continued rotation of the surface;

(c) a container mounted adjacent the circulatory drive members;

(d) intermeshing toothed surfacing means for forming toothed surfaces on said circulatory drive members; and



(e) means for driving said circulatory members in use of the stencil ejection apparatus for conjoint circulation entraining said stencil along a direction to draw the stencil from the surface as it moves in said print direction by holding the stencil between said intermeshing toothed surfacing means of the respective drive members, and then to release it into the container at a speed corresponding to the speed of movement of said rotary surface when rotating at said printing speed.

4,134,339

SCREEN-PRINTING STENCIL

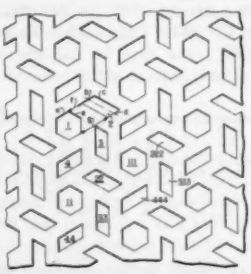
Walter A. Iten, Mutschellen, Switzerland, assignor to K. Iten AG, Rudolfstetten, Switzerland

Filed Nov. 8, 1976, Ser. No. 740,240

Claims priority, application Switzerland, Nov. 10, 1975, 14535/75

Int. Cl.² B41F *15/36*

U.S. Cl. 101—127 **4 Claims**



1. In a screen-type printing stencil of the type having therein plural holes through which passes printing material during a printing operation, the improvement wherein:

said plural holes are arranged in an overall pattern which is formed by the repetition of the arrangement of a primary pattern, said primary pattern comprising at least three holes, said holes of said primary pattern comprising one hole having the configuration of an equilateral polygon and at least two elongated holes, said holes of said primary pattern being arranged with respect to each other such that no two of said holes may be brought into coincidence or superimposition with respect to each other upon the rectilinear shifting of one with respect to the other.

4,134,340

THERMOPLASTIC FRAME FOR SILK-SCREEN

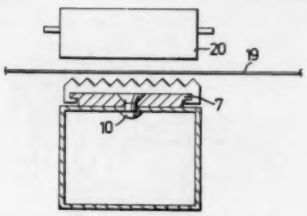
Ernst R. Larson, Stockholm, Sweden, assignor to K. E. Levin Maskin AB, Stockholm, Sweden

Filed Apr. 13, 1977, Ser. No. 787,117

Claims priority, application Sweden, Apr. 13, 1976, 7604315

Int. Cl.² B41F *15/36*

U.S. Cl. 101—127.1 **2 Claims**



1. In a frame for silk-screen printing arranged to have a cloth of thermoplastic material attached on a thermoplastic frame surface by the application of heat, the improvement comprising, a rectangular metal frame, said frame having side members, each of said side members provided with a metal bar on a face directed towards the cloth, each bar having longitudinal, outwardly directed flanges, said thermoplastic frame comprising a series of contoured plastic strips of thermoplastic material having generally the same length as the associated metal bar, each of said plastic strips having a longitudinal channel engaging said outwardly directed flanges on said bars for keeping the plastic strip on the metal bar, said plastic strips having surfaces facing towards the cloth.

4,134,341

DUPLICATING APPARATUS

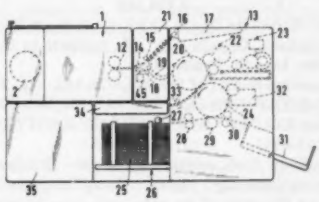
Reinhold Weigele, Korntal, and Kurt Moser, Gerlingen, both of Germany, assignors to Rolf Erich Müller, Fed. Rep. of Germany

Filed Dec. 30, 1976, Ser. No. 755,809

Claims priority, application 12301975, Dec. 30, 1975, 2559140

Int. Cl.² B41F *19/00*

U.S. Cl. 101—142 **33 Claims**



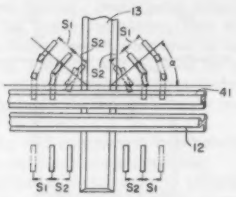
1. A duplicating arrangement which includes a copying means for making either at least one copy or a single master copy of an original by the same copying process, and an offset printing means operatively connected to said copying means for producing prints from said master copy, characterized in that said copying means is constructed as an independently functional module, and in that means are provided for selectively feeding the at least one copy from said copying means to a depository means when the selected number of copies is below a predetermined threshold number and said single master copy from said copying means to the offset printing means when the selected number of copies is equal to or above said threshold number.

4,134,342

BALLAST TAMPING APPARATUS

Tetsuo Sakai, Suita; Shigezo Shiraishi, Osaka; Choichi Kimura, Yokohama; Maki Nakajimi, Yokohama, and Hitoshi Sato, Yokohama, all of Japan, assignors to Nippon Kokuyu Tetsudo and K.K. Shibaura Seisakusho, both of, Japan

Filed Aug. 30, 1977, Ser. No. 829,048
Claims priority, application Japan, Sep. 16, 1976, 51/111028
Int. Cl.[2] E01B *27/16*
U.S. Cl. 104—12 **4 Claims**



1. A tamping machine for compacting ballast comprising, in combination:
(a) frame means;
(b) vertical guide means supported by said frame means;
(c) a carriage movable along said vertical guide means;
(d) means for moving said carriage up and down along said vertical guide means;
(e) at least one pair of normally opposed tamping units mounted on said carriage for up-and-down motion therewith, said tamping units comprising:
(1) a pair of swivel brackets mounted on said carriage for pivotal motion about vertical axes;
(2) a pair of tamping brackets each mounted on one of said swivel brackets for pivotal motion about a horizontal axis;
(3) means on said swivel brackets for oscillating said tamping brackets about said horizontal axes;
(4) a pair of tamping tools each extending downwardly from one of said tamping brackets; and
(5) means on said tamping brackets for vibrating said tamping tools; and
(f) means for adjustably pivoting said swivel brackets of said tamping units about said vertical axes and holding the same in desired angular positions with respect to said carriage.

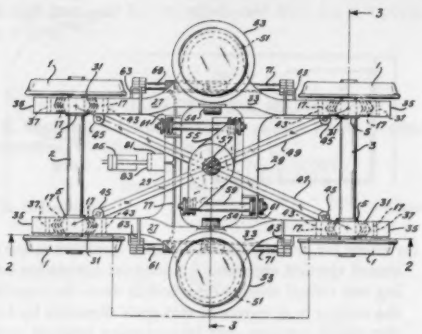
4,134,343

STEERING RADIAL AXLE RAILWAY TRUCK

Keith L. Jackson, Granite City, Ill., assignor to General Steel Industries, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 726,943, Sep. 27, 1976, abandoned. This application Nov. 24, 1976, Ser. No. 744,620
Int. Cl.[2] B61F *5/14, 5/16, 5/38;* B61H *13/24*
U.S. Cl. 105—167 **22 Claims**

1. A railway truck comprising a pair of wheel and axle assemblies each having a pair of railway flanged wheelsrigidly mounted on the ends of an axle, said axles being capable of pivoting about a vertical axis between positions transverse of the truck on tangent track and positions radial of the track on curved track, said wheels having a profiled tread of sufficient effective conicity to effect self-steering of each wheel and axle assembly by means of the differential effect between the wheel diameters of the outer and inner wheels on curved track, a rigid truck frame supported from said wheel and axle assemblies, resilient means supporting said truck frame and including supports carried on the end portions of said axles, said resilient means including elastomeric elements positioned between the respective end portions of said axles and said truck frame, and being yieldable longitudinally of the truck to accommodate, restrain and dampen movements of the respective end portions of each wheel and axle assembly longitudinally of the truck and pivoting movements of said wheel and axle assemblies and being sufficiently yieldable vertically to accommodate vertical movements of the respective end portions of each wheel and axle assembly with respect to said truck frame necessitated for proper distribution of the vertical load to the wheels irrespective of vertical track irregularities while being sufficiently stiff vertically to bear the entire vertical load of the truck, said resilient means being located inboard of said wheels thereby defining short transverse moment arms through which said resilient means act on each axle as a couple in opposing pivoting movements of the respective wheel and axle assemblies



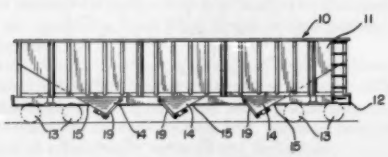
whereby to offer less restraint to such pivoting movements than the steering torques generated by the differential effect of said profiled wheel treads on curved track, and means interconnecting said wheel the resilient means supports on the respective axles substantially at axle level to cause said wheel and aide assemblies to pivot in opposite senses and co-operating with the longitudinal action of said resilient means to oppose hunting movements of the wheel and axle assemblies while coupling their wheel-induced steering movements to avoid interference with the self-steering capability of each wheel and axle assembly on curved track.

4,134,344

RAILWAY HOPPER CAR DOOR LOCK

Robert A. Spychalski, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 11, 1977, Ser. No. 786,726
Int. Cl.[2] B61D *7/02, 7/18, 7/26, 49/00*
U.S. Cl. 105—248 **10 Claims**



1. In a railway hopper car body having a discharge opening and a door structure pivotally mounted adjacent the upper part of the opening and swingable to an open position, the improvement of a latch assembly for retaining said door in a locked position comprising;
a keeper member mounted on said door,
a cam lever pivotally mounted on said body,
a latch element having a keeper engaging projection,
means hingedly connecting one end of said cam lever to said latch element,
operating means connected to the other end of said cam lever operable to pivot said cam lever and latch element between locked and open positions and including means arresting pivotal movement of said cam lever in said closed position,

said cam lever and latch element in a locked position with said keeper member and said keeper engaging projection having a relative folded angular configuration and in an opening position assuming a relatively linear configuration,

biasing means opposing movement of said latch to the open position and urging said cam lever and said latch element toward said linear configuration during opening movement of said latch element, and

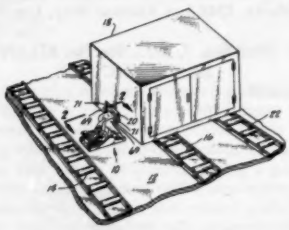
first cam stops on said cam lever and latch element engagable with each other during movement of said cam lever toward the open position imparting pivoted movement of said lever to said latch element; whereby said keeper engaging projection is disengaged from said keeper member and said door structure is swingable to an open position.

4,134,345

RETRACTABLE GUIDE LATCH MECHANISM

Floyd G. Baldwin, Garden Grove, Calif., and Stanley V. Voorhees, Zephyr Cove, Nev., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Sep. 12, 1977, Ser. No. 832,161
Int. Cl.[2] B61D *41/00*; B65J *1/22*
U.S. Cl. 105—366 B **10 Claims**



1. A retractable locking device for securing cargo containers on a floor in position comprising:

a base having right and left ends, a line joining said ends being perpendicular to the loading direction of a cargo container;

a first horizontal pivot axis in said base perpendicular to said line;

a second axis in said base to the right and parallel to said first axis;

an elongated pawl, the bottom of said pawl rotatably connected to said base at said first axis, said pawl adapted to rotate from a vertical position to a horizontal position with the free end of said pawl to the left of said first pivot axis, said free end of said pawl comprising a protrusion extending to the left for mating a matching depression of proper size in a cargo container;

extensible means, one end of which is rotatably attached to said pawl and the opposite end of said means attached to said base at said second axis;

cam means for depressing said pawl to the left and downward when an oversized cargo container is moved over said locking device in a loading direction; and

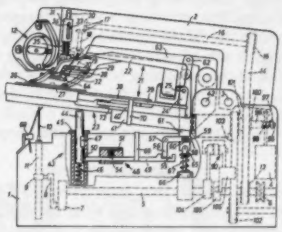
locking means for releasably holding said extensible means to maintain the protrusion on said pawl in engagement with the depression in a cargo container and for automatic erection of said elongated pawl after the passage of an oversized cargo container.

4,134,346

BUTTONHOLE SEWING MACHINE

Kurt Bolldorf; Walter Hager, both of Kaiserslautern, and Günter Tölle, Bruchsal, all of Germany, assignors to Firma Pfaff Industriemaschinen GmbH, Germany

Filed Oct. 27, 1977, Ser. No. 845,942
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1976, 2650032
Int. Cl.[2] D05B *3/06*
U.S. Cl. 112—70 **4 Claims**



1. A sewing machine for sewing a buttonhole in a workpiece, comprising a stationary lower part, an arm having one end pivotally mounted on said lower part and having an opposite end, a rotary hook rotatably mounted adjacent said opposite end of said arm, a needle mounted inssaid lower part for upward and downward reciprocation in cooperation with said rotary hook, drive means connected to said hook and to said needle to operate said hook and said needle in timed relationship, said arm being pivotable relative to said base part for moving said arm from a fixable sewing position with said hook spaced by a predetermined distance from said needle at a stitch forming area to a rest position in which it is spaced away from the stitch forming area, a thread monitoring device mounted on said lower part adjacent said needle, a buttonhole cutting mechanism connected to said drive means to periodically cut the workpiece, a resilient support on said lower part having an upright support member, spring means biasing said support member in an upward direction toward said arm, a workpiece clamp carried by said arm including a base clamping part adapted to rest on said resilient support against the force of said spring means and a top clamping part in the sewing position of said arm rest against said arm, and a locking member engageable with said support member and connected to said thread monitoring device to lock said support member in a selected partly raised position in dependence upon said monitoring deivce to expose said needle for re-threading.

4,134,347

METHOD AND APPARATUS FOR TUFTING EVEN LEVEL CUT PILE AND LOOP PILE IN THE SAME ROW OF STITCHING

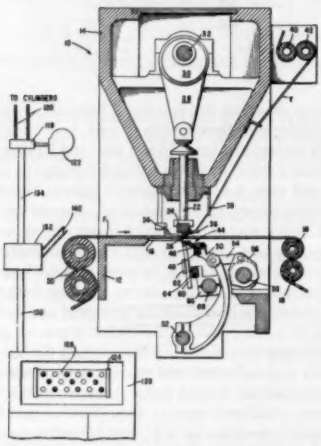
Paul E. Jolley, and Robert T. Crumbliss, both of Chattanooga, Tenn., assignors to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Jan. 31, 1978, Ser. No. 873,939
Int. Cl.[2] D05C *15/36*
U.S. Cl. 112—79 R **24 Claims**

1. In a tufting machine, means for feeding a base fabric in one direction, a yarn-carrying needle disposed on one side of said base fabric, means for reciprocating the needle for penetrating the base fabric and forming loops therein, means for feeding yarn to said needle, a hook disposed on the opposite side of the base fabric from said needle, said hook comprising a body portion including a blade, and a loop seizing bill extending from said blade facing in a direction opposite to the direction of fabric feed, means for mounting said body portion for oscillatory movement toward and away from said needle so that said blade enters and seizes successive loops, the feeding of the fabric moving the loops upon the bill toward the body portion,

a knife cooperating with said blade for severing loops thereon, gate means for engagably cooperating with said bill for closing the bill from the blade to prevent loops from moving onto the blade and for disengaging said bill for opening the bill to the blade to permit loops to move onto the blade, whereby loops permitted entry onto the blade are severed by said knife and loops prevented from entry onto the blade are shed by the bill as the hook moves away from the needle, and control means for selectively moving said gate means into and out of engagable cooperation with said bill.

17. A method of tufting cut pile and loop pile in the same row of stitching comprising supporting and feeding a base fabric in one direction, stitching a yarn continuously through said base fabric as the fabric moves to form a row of successive yarn loops on one side of said fabric, supporting upon said one side of said fabric on oscillating hook having a free end pointing in the direction opposite the fabric feed so that the free end enters the loops in succession and having a blade portion adjacent the free end that does not enter the loops, severing a



selected loop upon the blade portion to produce cut pile, closing the free end adjacent the blade portion with a movable gate to prevent entry of another selected loop onto said blade portion, and sheding said other selected loop from the free end to produce an uncut loop.

20. A hook for use in a tufting machine, said hook being planar and comprising a body portion having a blade and a shank having a mounting portion for mounting in a tufting machine hook bar, said blade extending from said shank to define a throat therebetween, said hook further comprising a bill extending from said blade remote from said shank, said blade having a top edge and a bottom edge that extends from said throat to said bill, said bill having a top edge that slopes toward said top edge of said blade and a bottom edge spaced below said bottom edge of said blade to define a joining edge connecting the bottom edge of said bill and the bottom edge of said blade, a gate member having a free end defining a latch, and means for pivotably mounting said gate on said shank for swinging said latch into and out of engagement with said bottom edge of said bill adjacent said joining edge.

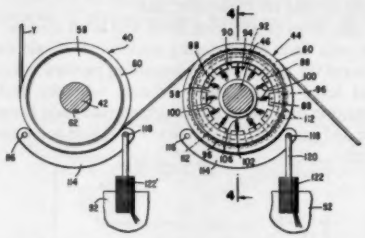
4,134,348

YARN FEED ROLLER ASSEMBLY

Jimmie D. Scott, Harrison, Tenn., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.

Filed Feb. 22, 1978, Ser. No. 880,188
Int. Cl.[2] D05C *15/00*
U.S. Cl. 112—79 R **17 Claims**

1. In a yarn feed roller assembly including a plurality of drive shafts, a feed roller on each of said shafts comprising, an inner race mounted on the drive shaft for rotation therewith, an outer race associated with the inner race, bearing means intermediate the inner and outer race for journally supporting the outer race on the inner race for rotation relative thereto, said outer race having a yarn engaging surface in the outer periphery and a drive coupling member at the inner periphery, a plurality of drive coupling segments rotatably carried by the inner race and radially movable relative thereto, biasing means for normally urging said segments radially away from the



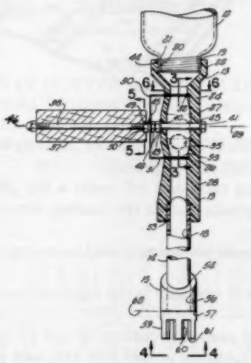
outer race, and actuating means for selectively forcing the segments to overcome the urging of the biasing means and move radially into coupling engagement with said drive coupling member to drive the outer race at the speed of the shaft, whereby yarn wound about corresponding rollers of said shafts may be fed at a rate determined by the speed of one or the other of the drive shafts.

4,134,349

FERTILIZER AND INSECTICIDE APPLICATOR

Eugene J. Marks, 5248 Los Adornos Way, Los Angeles, Calif. 90027

Filed Sep. 7, 1977, Ser. No. 831,159
Int. Cl.[2] A01C *5/02*
U.S. Cl. 111—95 **21 Claims**



1. A fertilizer and/or insecticide applicator comprising:

an elongated portable essentially tubular body structure adapted to carry at an upper location a supply of dry fertilizer and/or insecticide material, and containing a passage through which said material may fall downwardly to a bottom outlet opening for discharge through said opening onto a ground surface;

handle means carried by the body structure and by which a user may hold and manipulate the applicator; and

a valve element mounted to said body structure for rotary movement about an axis extending generally transversely of said passage and operable by said rotary movement to pass metered charges through said passage and to said outlet;

said valve element having portions which are curved circularly about said axis and are received within curved

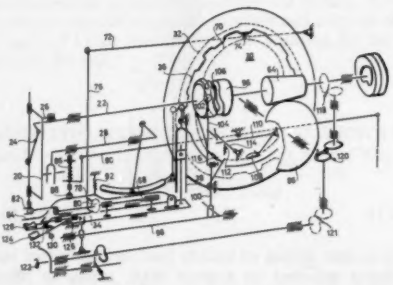
spaced slits in said body structure, said valve element containing aperture means operable in one position to pass a metered charge of said material through the valve element at the location of an upper one of said slits, and operable in a second rotary position to pass the metered charge downwardly past the location of a lower one of said slits.

4,134,350

COMBINED BUTTON STITCHING AND SEWING MACHINE

László Dancsó; Olivér Kocsis; Jenő Horváth, all of Budapest, and Miklós Bánszki, Gyöngyös, all of Hungary, assignors to Csepel Művek Járműi Es Konfekciópari Gépgyára, Budapest, Hungary

Filed May 16, 1977, Ser. No. 796,886
Claims priority, application Hungary, May 18, 1976, 1088
Int. Cl.² D05B *3/14*
U.S. Cl. 112—110 **5 Claims**



1. A conbined button stitching and sewing machine comprising, in combination: a control disc (**30**) having conjugated paths that control a needle swinging device (**20** to **28**, **32**) and a cloth moving mechanism (**36**, **38**) complete with an orienting device (**124** to **128**, **134** to **140**) for applying a pair of fixing stitches to a button to be attached with a conventional shank to at least one adjacent cloth layer; said control paths of the disc including first main sections (**40**, **42**) for controlling button stitching, second main sections (**44**, **46**) for controlling the fixing stitches, and third main sections (**52**, **54**) for controlling the formation of the shank; wherein fourth sections (**48**, **50**) are inserted in said control paths for controlling through stitches, between said second and said third main sections, whereby an additional cloth layer is through stitched, in addition to the preceding fixing stitches, while avoiding the formation of wrinkles in the cloth layers.

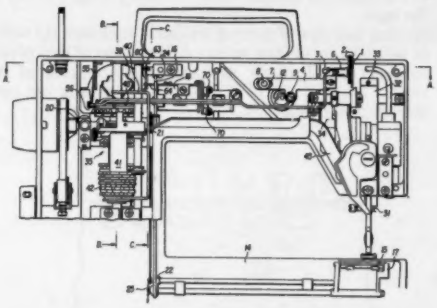
4,134,351

SEWING MACHINE

Hannes Giesselmann, Huskvarna, Sweden, assignor to Husqvarna Aktiebolag, Huskvarna, Sweden

Filed Jun. 29, 1977, Ser. No. 810,942
Claims priority, application Sweden, Jul. 1, 1976, 7607540
Int. Cl.² D05B *3/02*
U.S. Cl. 112—158 A **6 Claims**

1. A zig-zag sewing machine having a plurality of rotary selectively connectable cam plates with cam followers for guiding a laterally moveable needle bar to produce fancy seams, seam selecting means for activating one of the cam plates, setting means for regulating forward feed and feed direction of the cloth, means for regulating over-thread tension, and pattern selecting means including a setting region in which, in addition to the selection of a pattern, controls for the cloth feed and over-thread tension are arranged to be activated and set to predetermined values by movement transmitting means for transmitting movement from the pattern selecting means directly to an adjustable cullis and thread brake respectively, irrespective of the setting positions of respective setting means for said cullis and brake, said movement transmission means comprising cam plates and cam followers with associated links, and coupling and uncoupling means which are maneuverable by said links to cancel settings set by the setting means for the cullis and thread brake respectively.

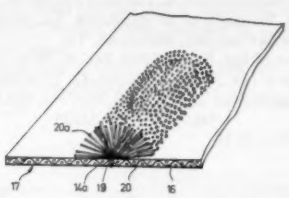


4,134,352

DECORATIVE TEXTILE, METHOD FOR MANUFACTURE THEREOF AND SEWING MACHINE ATTACHMENT THEREFOR

Rosa Csiddr, Therwil, Switzerland, assignor to Irene Jahn-Csüdör and Irene Fuzesi-Kurtos, both of Therwil, Switzerland

Filed Jul. 13, 1977, Ser. No. 815,212
Int. Cl.² D05C *17/00*
U.S. Cl. 112—262 **5 Claims**



1. A method of producing a decorative textile without fabric base support comprising; winding a flat coil form having an open slot with thread such that said open slot is at least partially covered with said thread windings the free thread end wound at least once perpendicular to said thread windings forming longitudinal windings, stitching said thread windings through said longitudinal windings on a sewing machine through said slot, cutting said thread windings on both sides of said coil form, and removing the decorative textile from the coil form the thread windings having been sewn together and the opposing loops formed thereby cut exposing loose thread ends.

4,134,353

SLIDING CLASP FASTENER AND METHOD OF PRODUCING THE SAME

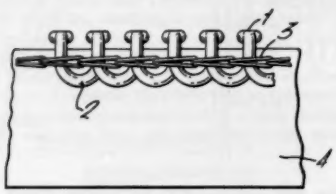
Geoffrey Warburton, and Roland Parker, both of Cardiff, England, assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 554,033, Feb. 28, 1975, abandoned, which is a continuation of Ser. No. 306,583, Nov. 15, 1972, abandoned.
This application Dec. 17, 1976, Ser. No. 752,211
Claims priority, application United Kingdom, Nov. 19, 1971, 53900/71
Int. Cl.² D05B *3/12*
U.S. Cl. 112—265 **6 Claims**

1. A method of manufacturing a sliding clasp fastener stringer comprising the steps of:

warp knitting an elongate carrier tape of a yarn having a high thermal shrinkage, the tape having a predetermined initial width, and said warp knitting including the forming of a plurality of spaced wales extending longitudinally in the tape;

subjecting said tape to thermal treatment to reduce the width of said tape by at least twenty-five percent of said predetermined initial width, to increase interlocking of the knitted loops in the carrier tape, and to pack the yarn thereof closer; and



then mounting a series of fastener elements on one edge portion along one longitudinally extending edge of said carrier tape;

said mounting including the forming of a longitudinal line of stitching on said one edge portion positioned inward from the one edge of the tape by more than the width of first and second wales of said plurality of wales on the one edge of the tape.

4,134,354

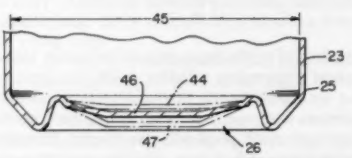
METHOD OF MAKING A CONTAINER

Daniel S. Cvacho; Edwin R. Haufler; Joseph W. Wallace, and James M. Woolard, all of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Division of Ser. No. 656,045, Feb. 6, 1976, which is a continuation of Ser. No. 487,996, Jul. 12, 1974, abandoned. This application Aug. 4, 1977, Ser. No. 821,712

Int. Cl.[2] B21D *51/26*

U.S. Cl. 113—120 H **1 Claim**



1. A method of making a series of drawn and ironed easily hand-held metallic containers of the type having a central longitudinal axis and comprising a side wall which has opposed ends and a bottom wall closing one of said opposed ends, said bottom wall having a first portion adjoining said one end and extending inwardly toward said longitudinal axis, and a second portion adjoining said first portion and adapted to have the location thereof adjusted relative to said central longitudinal axis, said method comprising the steps of:

drawing and ironing a first such metallic container by means of a first cooperating punch and die;

forming said bottom wall of said first metallic container by means of a first supplemental die to adjust the location of said second portion to obtain a given volume of said container;

forming additional such containers in accordance with the above defined steps, but permitting the volume of said additional containers to vary from said given volume by a predetermined amount of said cooperating punch and die wear; and,

readjusting the location of said second portion of subsequent containers to a second location to again obtain said given volume in said subsequent containers, whereby the volume of said containers can be maintained within desired limits without replacing said cooperating punch and die because of wear thereof.

4,134,355

SNAG-RESISTANT ANCHOR

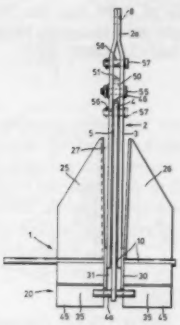
John A. Carruthers, 30 Coates Ave., Auckland, New Zealand

Filed Apr. 29, 1977, Ser. No. 792,218

Claims priority, application New Zealand, May 6, 1976, 180787; Aug. 23, 1976, 181828

Int. Cl.[2] B63B *21/38*

U.S. Cl. 114—297 **7 Claims**



1. An anchor having an anchor head including two spaced apart flukes mounted on a pivot shaft, a pair of parallely aligned cheek plates provided on inner sides of said flukes and providing a recess therebetween, inner ends of primary and secondary shafts engaged pivotally with said pivot shaft within the recess, said cheek plates mounting a stop plate thereon against which an inner end of the secondary shaft can pivot, an outer end of the primary shaft mounting a release mechanism which releasably engages an outer end of the secondary shaft with said primary shaft, said primary shaft and secondary shaft able to pivot until the inner end of the secondary shaft contacts said stop plate and upon a predetermined strain being placed thereon an outer end of the secondary shaft is forced to disengage from the release mechanism to enable the primary shaft to move freely relative to the secondary shaft.

4,134,356

ANCHORS

Peter Bruce, "De Victoria"App. 5e etage - Bloc D, 13 bd Princesse Charlotte, Monte Carlo, Monaco

Filed Jun. 9, 1976, Ser. No. 694,485

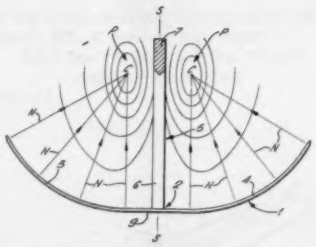
Claims priority, application United Kingdom, Jun. 13, 1975, 25295

Int. Cl.[2] B63B *21/24*

U.S. Cl. 114—301 **16 Claims**

1. An anchor including a fluke having a burial surface thereon which in a vertical working burial attitude of the anchor is inclined relative to the horizontal to be penetrable into a mooring bed when dragged thereover whereby forces are developed by the burial surface to cause burial of the anchor, and a shank member located in a fore-and-aft plane of symmetry of the anchor and attached to the fluke and having an end adapted as a cable attachment point, the fluke having at either side of said plane of symmetry side portions with substantially cylindrical upper working surfaces, upwardly extending normals from said working surfaces intercepting said plane of symmetry such that the fluke has a substantially concave upwardly facing working surface, the centres of curvature of transverse sections of said fluke side portions being located outside the part of the plane of symmetry which lies

below and forward of at least a portion of the shank member so that, when the anchor is pulled through the mooring bed in a vertical burial attitude, the centre of the peak pressure focus zone produced in the mooring bed soil by the upper working



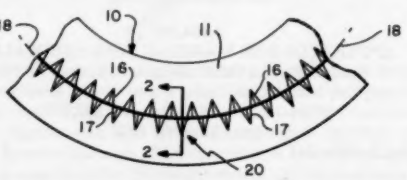
surface of each fluke side portion, due to relative movement and consequential impingement of the soil thereof, is located substantially clear of the shank member and clear of the forward path of burial movement to be followed by the shank member in the soil.

4,134,357

PNEUMATIC TIRE INFLATION LEVEL INDICATOR

Gilman D. Chesley, 22431 Starling Dr., Los Altos, Calif. 94022

Filed Oct. 28, 1977, Ser. No. 846,578
Int. Cl.[2] B60C *23/04*
U.S. Cl. 116—34 A **11 Claims**



1. In a pneumatic tire having a casing which flexes under load to an extent dependent on the pressure in the tire: a first group of raised mesas affixed to the outer face of the sidewall of the casing on one side of the centerline of the sidewall, a second group of raised mesas affixed to the outer face of the sidewall on the other side of the centerline and interposed between the mesas of the first group, said groups of mesas tending to pivot away from the centerline upon flexing of the sidewall when the pressure in the tire is below a predetermined level and to overlap at the centerline when the pressure is above the predetermined level, and indicator means carried by the mesas for providing an indication of the pressure in the tire by the relative positions of the indicator means on adjacent ones of the mesas.

4,134,358

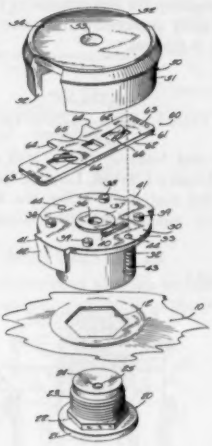
AUDIBLE SIGNAL VALVE KNOB

Thomas W. Heermans, West Bend, Wis., assignor to Regal Ware, Inc., Kewaskum, Wis.

Filed Dec. 12, 1977, Ser. No. 859,368
Int. Cl.[2] G01L *19/12*
U.S. Cl. 116—70 **14 Claims**

1. In a knob for a vessel in which substances containing water are to be heated, said knob containing passages shaped to cause an audible whistle upon the passage of steam through said passages, and having a valve controlling them movement of steam through said passages, the novelty comprising;

a resonance chamber which is a part of said passages, said knob comprising a base part and a separable part each containing portions of the wall of the resonance chamber whereby separation of the parts permits cleaning of the resonance chamber, the base portion having at least a part underlying the top of said vessel and a non-circular part extending through a complementary non-circular opening



in the vessel, said separable part of the knob being removably secured to the base part and having a portion bearing on the outside of the top of the vessel.

4,134,359

PACKAGE OF BIOLOGICALLY ACTIVE MATERIAL STORED AT A CRYOGENIC TEMPERATURE AT WHICH IT IS INACTIVE AND METHOD OF MAKING THE SAME

Donald J. Redpath, Norton, Mass., assignor to United Aniline Co., Norwood, Mass.

Filed Jun. 27, 1977, Ser. No. 810,177
Int. Cl.[2] G01K *11/06*
U.S. Cl. 116—219 **3 Claims**

3. A package of biologically active semen that becomes inactive at a predetermined cryogenic temperature in the neighborhood of −100° C., said package including a substantially transparent tube having a closed end that is to be the upper end during storage, a frozen predetermined volume of an indicator in said closed end of a color different than that of semen and having a melting point close to but above said predetermined temperature, a frozen, wanted volume of the semen in said tube, a barrier between the indicator and the

semen but spaced from the indicator, said barrier permeable by the indicator when and if thawed, and a closure at the other end of the tube, the volume of the indicator such that, if melted it will flow through the barrier and discolor the semen, the tube of a type enabling the end containing the indicator and the barrier to be readily detached if the color of the semen, when it is to be used, is normal.

4,134,360

APPARATUS FOR VAPOR DEPOSITION ON TUBULAR SUBSTRATE

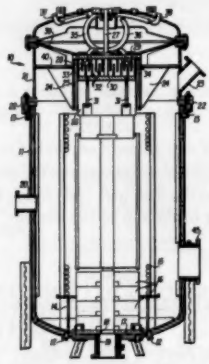
Ronald Fisher, and Norman Smith, both of Rugby, England, assignors to Dunlop Limited, London, England

Filed Aug. 8, 1977, Ser. No. 822,824

Claims priority, application United Kingdom, Aug. 11, 1976, 33339/76

Int. Cl.[2] C23C *13/08*

U.S. Cl. 118—49.1 **5 Claims**



1. Apparatus for the deposition of carbon on an annular fibrous substrate to produce an all-carbon composite article comprising:

a furnace having a wall

support means in said furnace to support an annular fibrous substrate,

ram means associated with the furnace to hold the substrate in compression against said support means,

means to move said ram toward and away from said support means,

means for heating said furnace,

gas inlet and gas outlet means in said furnace wall; and

a gas flow path within said furnace passing through the wall of the substrate so that gas will pass through the substrate when moving from the inlet to the outlet, whereby a hydrocarbon gas cracks while passing through the wall of the fibrous substrate from said gas inlet to said gas outlet to deposit carbon on the fibrous substrate being held under pressure in the furnace by the ram.

4,134,361

BOWLING ALLEY CONDITIONING DEVICE

Herschel T. Benjamin, 944 NW. 96th, Seattle, Wash. 98117

Filed Mar. 1, 1978, Ser. No. 882,381

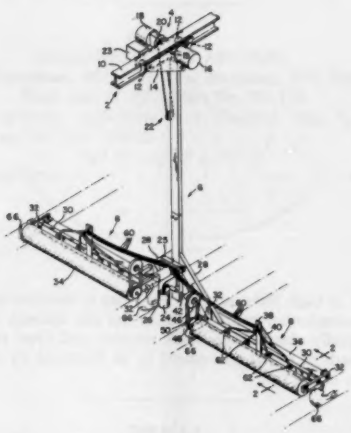
Int. Cl.[2] A47L *11/03, 11/18*

U.S. Cl. 118—73 **7 Claims**

1. An automated bowling alley servicing mechanism comprising:

central control and distribution apparatus movable along the length of the alley for assuring proper tracking of the mechanism as well as providing the driving force and materials for the servicing operations,

a pair of oppositely extending rigid support members adjustably secured to and movable with the central control and distribution apparatus, each of said support members including dispensing means for a solvent and an alley conditioning oil, scrubbing means for use in conjunction with the solvent and distribution means for the oil whereby the alley is uniformly serviced, and



means to move the mechanism from a stored position adjacent the ceiling above an adjacent pair of alleys to be serviced to an operational position adjacent to alley surface, move the mechanism the length of the alley and return the mechanism to the stored position.

4,134,362

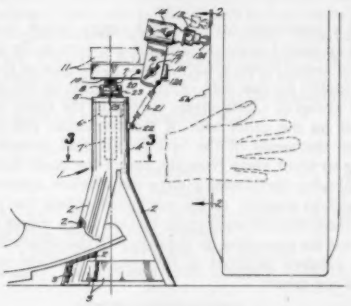
APPARATUS FOR MARKING TIRE SIDEWALLS

Kim E. Rush, Fullerton, Calif., assignor to Kustom Fit Manufacturing Co., South Gate, Calif.

Filed Jan. 16, 1977, Ser. No. 869,573

Int. Cl.[2] B05C *1/02*

U.S. Cl. 118—211 **4 Claims**



1. Apparatus for applying fluid coloring material to the sidewall of a vehicle tire, said apparatus comprising:

a stand including a base having perimetrically arranged bearing portions adapted to engage a supporting surface, said base including a foot shelf extending inwardly of the perimeter of said bearing portions, said base further including an opening above said foot shelf adapted to allow an operator's foot to be placed upon said foot shelf whereby the operator may bias the inner extremity of said foot shelf downwardly to effect firm engagement between said bearing portions and the supporting surface;

a holder mounted to said stand, and including an applicator adapted to contain fluid coloring material and further adapted for movement outwardly of said holder for engagement with the sidewall of a vehicle tire; and

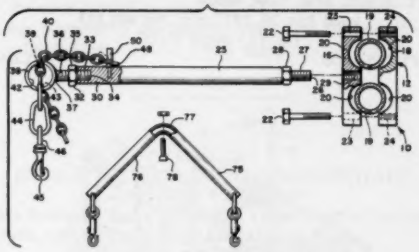
bias means normally urging said applicator outwardly of said holder.

4,134,363
COW TRAINER WITH DISCONNECT SWITCH
Lester A. Stock, Rte. 1, Newton, Wis. 53063
Filed Jan. 10, 1977, Ser. No. 757,817
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—27 **5 Claims**

1. In a cow trainer adapted to be hung from an electric wire and comprising a cow control bar, a hanger stem connected to the cow control bar, a hanger bracket adapted for attachment to the electric wire and a disconnect switch between the hanger bracket and stem, the stem and cow control bar hanging by gravity from the disconnect switch, the improvement in which said disconnect switch comprises an insulating sleeve having a bore in which one end of the stem is slidably received, means connecting said insulating sleeve to said hanger bracket with the bracket exposed to said bore to act as an electric contact, and insulating strap means interconnecting the sleeve and stem for support of the stem from the sleeve, to limit separation therebetween and whereby the weight of the stem and cow control bar will normally pull said strap means to a fully extended position supporting the stem in said bore with its end in spaced relation to the hanger bracket and out of electric contact therewith, said strap means being yieldable when subject to upward movement of the stem to permit the stem to slide upwardly in said bore to make electric contact with the hanger bracket.

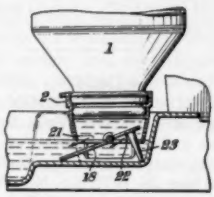
4,134,364
DOG EXERCISING DEVICE
Eleanor K. Boncela, No. 814 8800 S. Harlem Ave., Bridgeview, Ill. 60455
Filed Aug. 26, 1976, Ser. No. 717,599
Int. Cl.[2] A01K *27/00*
U.S. Cl. 119—29 **9 Claims**

1. An animal exercising device for attachment to a vehicle such as a bicycle comprising a reach assembly, mounting means at each end of said reach assembly one of which is adaptable for mounting on a vehicle, an animal tether connected to the other of said mounting means of said reach assembly, and at least one of said mounting means comprising overload release means operable to yield upon the imposition of a predetermined load upon the tether, said overload release means comprising means releasable in response to pull on the



tether beyond a predetermined load for separating the tether from the reach to prevent overturning of the vehicle.

4,134,365
AUTOMATIC FEEDING APPARATUS
Lionel H. Futers, 10 Lenham Rd., East Rottingdean, Brighton, East Sussex, and Robert P. Beaumont, 9 Outlook Ave., Peacehaven, East Sussex, both of England
Filed Dec. 14, 1976, Ser. No. 750,554
Claims priority, application United Kingdom, Sep. 2, 1976, 36297/76
Int. Cl.[2] A01K *5/00, 7/00*
U.S. Cl. 119—51.5 **4 Claims**

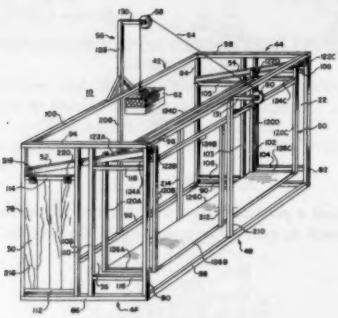


1. Automatic feeding apparatus for animals comprising:
a liquid container;
a cap removably fitted to said liquid container, said cap being provided
with a hole having first and second ends and said hole having a pivotably mounted flap, the pivot axis for said flap being located intermediate said first and second ends of said hole an operating member projecting from said flap operative to move said pivotably mounted flap to a first position in which two openings are formed in the cap, one on each side of said pivot axis, and said pivotably mounted flap also being movable to a second position in which said two openings are closed;
a first member consisting of synthetic resin material and constituting
a hopper and clips adapted to support said liquid container; and
a second member removably secured to said first member, said second
member consisting of synthetic resin material and constituting a food dish, a reservoir, a drinking vessel and a passage connecting said reservoir to said drinking vessel.

4,134,366
ANIMAL SORTER

John L. Elliott, Alvo, Nebr. 68304

Filed Jun. 20, 1977, Ser. No. 808,113
Int. Cl.[2] A01K *29/00*
U.S. Cl. 119—155 8 Claims

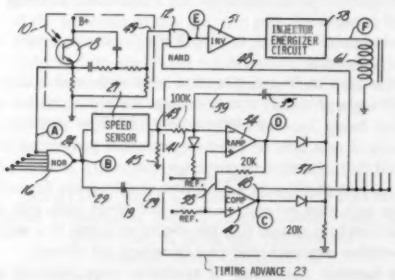


1. Animal sorting means including:
a housing;
said housing having one housing entrance and first and second housing exits;
a chute having a chute entrance and a chute exit;
said chute being biased into a position within said housing in which said chute entrance is aligned with said housing entrance and said chute exit is aligned with one of said first and second housing exits; and
means for moving said chute between said position in which said chute entrance is aligned with said housing entrance and said chute exit is aligned with said one of said first and second exits to a position in which said chute exit is aligned with said other of said first and second housing exits when said chute holds a weight greater than a predetermined weight.

4,134,367
ELECTRONIC FUEL INJECTION CONTROL

William R. Ferry, and James R. Voss, both of Springfield, Mass., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 26, 1977, Ser. No. 800,681
Int. Cl.[2] F02B *3/00*; F02P *5/14*
U.S. Cl. 123—32 EA 1 Claim

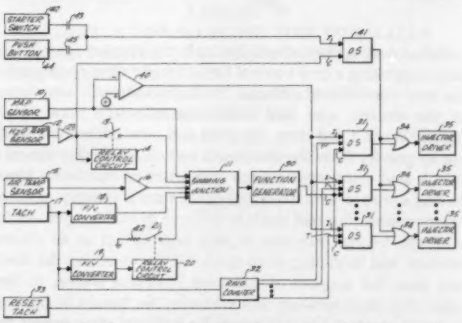


1. Engine fuel injector control means comprising in combination: a pulse generator (**10**) for each injector timed by the engine so that the width of the generated pulse is inversely related to engine speed; a NOR gate (**16**) having input terminals connected to the various pulse generators for developing trigger signals (B) having the same width as the generated pulse (A); speed sensor means (**21**) comprising a capacitor (**28**) for developing an analog signal directly related to engine speed; timing advance means (**23**) comprising a ramp generator (**34**) and a comparator (**40**); said ramp generator having a first input terminal connected to a reference voltage source and a second input terminal connected to the speed sensor means; said comparator having one input terminal connected with a second reference voltage source and another input terminal (**42**) connected with the ramp generator output; the comparator output being connected through a capacitor (**35**) to the second input terminal of the ramp generator; the ramp generator and comparator being interconnected so that the comparator output is switched between low and high states when the ramp generator output slews to the second reference voltage; the ramp generator being constructed so that its slew rate is directly proportional to the value of the input analog signal developed by the speed sensor means, whereby the comparator switching time is inversely proportional to engine speed; the comparator reference voltage source being connected to the NOR gate output, whereby the condition of the NOR gate determines the operating mode of the comparator; a NAND gate **12** for each injector, each NAND gate having one input terminal connected to a corresponding pulse generator and another input terminal connected to the comparator output (C), whereby the NAND gate output signal (E) will be initiated by the comparator output (C) and terminated by the generated pulse (A); and an injector energizer circuit **58** connected to each NAND gate output.

4,134,368
FUEL INJECTION CONTROL SYSTEM

Dawson N. Hadley, Claremont, Calif., assignor to Edelbrock-Hadley Corporation, El Segundo, Calif.

Filed Jun. 6, 1977, Ser. No. 803,606
Int. Cl.[2] F02B *3/00*
U.S. Cl. 123—32 EA 19 Claims



1. A fuel injection control system for an internal combustion engine having a plurality of cylinders and an equal number of fuel injectors with a variable open interval that controls the quantity of the injected fuel, the system comprising:
first sensing means for generating a first signal with a magnitude representing one engine parameter, the magnitude of the first signal being a nonlinear function of the engine fuel requirement;
second sensing means for generating a second signal with a magnitude representing another engine parameter, the magnitude of the second signal being a nonlinear function of the engine fuel requirement;
means for additively combining the first and second signals to form a composite signal with a magnitude that is a nonlinear function of the engine fuel requirement;
function generating means responsive to the composite signal for generating a fuel requirement signal with a magnitude that is a linear function of the engine fuel requirement; and
means for opening each fuel injector in turn for an interval proportional to the characteristic of the fuel requirement signal.

11. A fuel injection control system for an internal combustion engine having a plurality of cylinders and an equal number

of fuel injectors with a variable open interval that controls the quantity of the injected fuel, the system comprising:

means for sensing one or more engine parameters indicative of the engine fuel requirement to generate a fuel requirement signal with a characteristic that is a linear function of the engine fuel requirement;

a plurality of one-shot multivibrators corresponding to the respective fuel injectors, each multivibrator having a quasi-stable state initiated by a trigger pulse;

means responsive to the sensing means for controlling the duration of the quasi-stable state of the multivibrators in proportion to the characteristic of the fuel requirement signal;

means responsive to engine rotation for generating trigger pulses to initiate the quasi-stable state of each multivibrator in turn;

a plurality of injector drivers corresponding to the respective fuel injectors, each injector driver opening the corresponding fuel injector during the interval that the multivibrator corresponding to such fuel injector is in its quasi-stable state to vary the open interval of the fuel injectors to meet the engine fuel requirement;

an overriding one-shot multivibrator having a quasi-stable state initiated by a trigger pulse;

an engine starter switch generating a trigger pulse to initiate the quasi-stable state of the overriding multivibrator as the engine is started; and

means for coupling the overriding multivibrator to the injector drivers to open all the fuel injectors simultaneously during the interval that the overriding multivibrator is in its quasi-stable state.

4,134,369

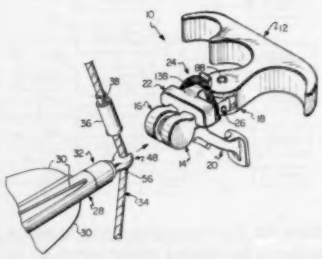
ARROW RELEASE MECHANISM AND ARROW NOCK THEREFOR

Thomas H. Cook, 1910 Cheyenne Dr., Scottsbluff, Nebr. 69361

Filed Dec. 15, 1976, Ser. No. 750,585

Int. Cl.² F41B *5/00, 5/02*

U.S. Cl. 124—35 A **15 Claims**



1. A hand-held arrow release mechanism for use in combination with an arrow having an arrow nock with a cam surface thereon facing the forward tip of the arrow, the arrow nock being coupled to the arrow and received on a bowstring, the release mechanism comprising:

a handle;

a pair of opposed jaws, each having a recess on facing sides thereof, the forward portion of each recess being in the form of a cam follower surface corresponding to part of the cam surface on the nock;

means for pivotally coupling said jaws to said handle;

means, coupled to said jaws, for biasing said opposed jaws toward each other into a nock grasping position in which the cam surface portion of the nock contacts the cam follower surfaces of the recesses;

locking means, for locking said jaws together in the grasping position thereby locking the nock between said jaws;

means for pivotally coupling said locking means to said jaws; and

manually activated means, coupled to said locking means for releasing said locking means thereby allowing the nock cam surface to move forward along said cam follower surfaces under the influence of the bowstring pulling on the nock so said jaws are pivoted outwardly of the grasping position by the moving nock cam surface, thereby releasing the nock and arrow therefrom.

4,134,370

ENGINE WITH AIR-COOLED NON-CONTACT IGNITION SYSTEM

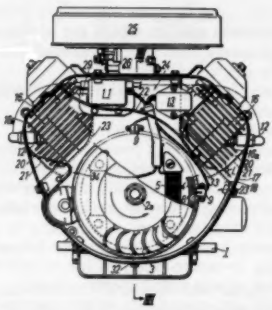
Toshio Iwahashi; Kouji Nakai, and Yoshio Tani, all of Osaka, Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Apr. 20, 1977, Ser. No. 789,299

Claims priority, application Japan, Jan. 24, 1977, 52-7139

Int. Cl.² F01P *1/06*

U.S. Cl. 123—41.31 **6 Claims**



1. An air-cooled, V-shaped engine, including:

a crankcase having cylinder means mounted on the opposite sides thereof to form a V-shape, said cylinder means being provided with cooling fins, and said crankcase further having a mounting plate on the front end thereof;

a crankshaft rotatably mounted in said crankcase, the front end of said crankshaft projecting forwardly from said mounting plate;

a flywheel fan mounted on the projecting front end of said crankshaft;

a cover secured to said mounting plate and covering said flywheel fan, said cover having air inlet opening means thereon, and two air outlet openings in its rear end, one on each side of said crankcase;

enclosure means mounted on each side of said crankcase, each adapted to receive cooling air from one of said air outlet openings and to channel it to flow over the cooling fins of the cylinder means associated therewith;

divider means within said cover, arranged to divide said cover into two chambers, one associated with each of said outlet openings, and a compartment having its interior shielded from said flywheel fan by said divider means; and

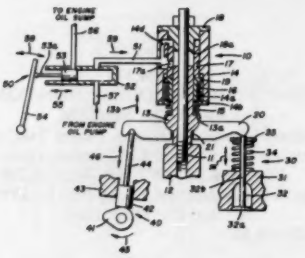
a non-contact ignition system connected and arranged to operate said engine, said system including an ignition plug associated with each of said cylinder means, an ignition coil associated with each of said ignition plugs, generator means incorporated in said flywheel fan, and a non-contact controller unit connected with said generator means and said ignition coils;

said generator means, said ignition coils and said non-contact controller unit being housed within said cover, with said ignition coils and said non-contact controller unit being housed within said shielded compartment defined between said divider means and said cover.

4,134,371
VALVE CONTROL SYSTEM

Louis A. Hausknecht, 4504 State Rd., Cleveland, Ohio 44101

Filed Apr. 28, 1977, Ser. No. 791,691
Int. Cl.[2] F01L *1/24*
U.S. Cl. 123—90.43 4 Claims



1. Means for controlling the operational event of valves in internal combustion engines which are activated by the conversion of the rotary motion of a cam shaft into linear motion of a cam follower, comprising:

(A) a housing having a central blind bore opening into one face thereof;

(B) a variable hydraulic system;

(C) said housing having a passageway interconnecting said hydraulic system and said central bore;

(D) a cylindrical sleeve slidably received within said blind bore and having a through radial aperture variably positionable within said bore,

(1) whereby hydraulic fluid may be introduced into said housing to control the position of said sleeve and the location of said radial aperture therein;

(E) a rocker arm operatively interconnecting the cam shaft and the valve and mounted for pivotal movement; and

(F) a control member

(1) resting on said rocker arm,

(2) slidably received within said sleeve, and

(3) movable in response to linear movement of the cam follower and said rocker arm to close off said radial aperture in said sleeve and trap said fluid in said blind bore,

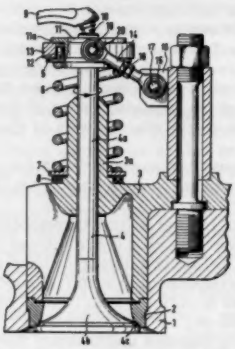
(a) whereby further linear movement of said rocker arm is prevented by said fluid and pivotal movement is permitted.

4,134,372
VALVE ROTATING DEVICE

Ruprecht Maurer, and Karlheinz Timtaer, both of Bad Homburg von der Hohe, Fed. Rep. of Germany, assignors to Ringspann Albrecht Maurer K.G., Bad Homburg von der Hohe, Fed. Rep. of Germany

Filed Oct. 12, 1977, Ser. No. 841,373
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646535
Int. Cl.[2] F01L *1/32*
U.S. Cl. 123—90.28 7 Claims

1. In a device for rotating a reciprocating valve having a stem and executing alternating opening and closing strokes; the device having an overrunning clutch coupled to the valve stem; a control lever; first attachment means connecting the control lever to the overrunning clutch; second attachment means supporting the control lever at a distance from the overrunning clutch; the control lever being arranged to impart to the overrunning clutch a torque derived from the reciprocating motion of the valve; the overrunning clutch being arranged to transmit the torque to the stem for effecting rotation thereof about the stem axis solely during the closing strokes; the improvement wherein said first attachment means is a first articulation joining said control lever to said overrunning clutch and said second attachment means is a second articulation joining said control lever to a stationary component; said second articulation being situated at a predetermined fixed location selected such that a line connecting said articulations defines a first angle with the valve stem axis at the end of each

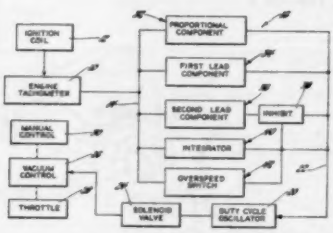


closing stroke and a second angle at the end of each opening stroke; said first angle being an acute angle and said second angle being 90° at the most and being greater than said first angle.

4,134,373
ENGINE SPEED LIMITING CONTROL CIRCUIT

Roland G. Kibler, Flushing, and Bruce C. Hartfelder, Davison, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1977, Ser. No. 838,540
Int. Cl.[2] F02D *11/10*
U.S. Cl. 123—102 1 Claim



1. In a system for limiting engine speed to near a governed value having means for limiting engine speed, a control circuit for actuating the limiting means comprising

means for producing an electrical speed signal proportional to engine speed,

a modifying circuit responsive to the speed signal for producing a control signal for energizing the limiting means as a function of engine speed,

a duty cycle oscillator responsive to the control signal for producing a pulsed output having a duty cycle generally proportional to the control signal, the pulsed output energizing the limiting means,

the modifying circuit including means for producing a first component of the control signal proportional to engine speed, derivative means for producing a lead component of the control signal proportional to engine acceleration, integrator means including a capacitor for producing an integrated component of the control signal comprising the integral of the excess of the engine speed over a governed speed, the integrated component when it attains a predetermined value being effective to raise the control signal to a sufficient value for maximum engine speed limiting,

means responsive to the said integrated component for reducing the value of the lead component when the integrated component attains the said predetermined value, and speed switch means effective when engine speed reaches a preset limit speed above the governed speed for rapidly charging said capacitor of the integrator means to the said predetermined value of the integrated component to effect maximum engine speed limiting, the integrating action of the integrator means being predominant during gradual engine acceleration and lead component and the speed switch action being predominant during sudden acceleration,

whereby the control circuit is conditioned to provide an energizing signal to the limiting means sufficient to limit engine speed near a governed value for both gradual and sudden engine acceleration.

4,134,374
METHOD AND APPARATUS FOR DETECTING CYLINDER MALFUNCTION IN INTERNAL COMBUSTION ENGINES

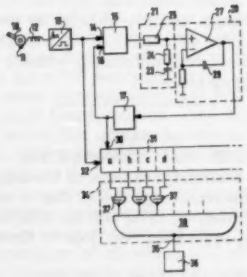
Reinhard Latsch, Vaihingen; Valerio Bianchi, Hochdorf, and Hans Zeller, Grafenau, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 6, 1977, Ser. No. 804,023

Claims priority, application Fed. Rep. of Germany, Jun. 10, 1976, 2625971

Int. Cl.² F02P *1/00*

U.S. Cl. 123—117 D **9 Claims**



1. A method for detecting malfunctions in individual cylinders of an internal combustion engine, comprising the steps of

generating first electrical pulses in synchronism with the rotation of an engine member;

providing a phase comparator for generating a control signal and applying said first electrical pulses to one signal input of said phase comparator;

applying said control signal to a signal generator to thereby generate a train of second electrical pulses having a frequency equal to the average frequency of said first pulses and applying said second pulses to the other input of said phase comparator;

providing a shift register having a data input and clock input and applying the first pulses to one of the inputs of the shift register and applying the second pulses to the other input of the shift register, thereby storing in the shift register a sequence of phase data bits indicating the sense of the relative phase difference between the first and second pulses; and

triggering a warning device when all of the data bits in the stored sequence indicate the same sense of relative phase difference between the first and second pulses.

4,134,375
METHOD OF AND SYSTEM FOR CONTROLLING FUEL/AIR RATIO IN AN INTERNAL COMBUSTION ENGINE

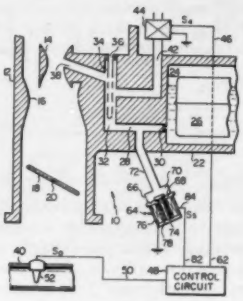
Shyushi Koseki, and Ken-ichi Koizumi, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 23, 1977, Ser. No. 799,162

Claims priority, application Japan, May 24, 1976, 51/589970

Int. Cl.² F02M *23/04*; F02D *1/04, 33/00*

U.S. Cl. 123—119 EC **9 Claims**



6. In an automotive internal combustion engine having a carburetor including a fuel delivery circuit, a mixture ratio control system for controlling the fuel-to-air ratio of the air-fuel mixture to be produced in the carburetor, comprising:

(a) air-inlet means for feeding air into said fuel delivery circuit;

(b) valve means disposed in said air-inlet means for controlling the flow rate of air through the air-inlet means so that the fuel in the fuel delivery circuit is discharged therefrom at a rate variable with the flow rate of air through the air-inlet means;

(c) detecting means for detecting from the exhaust gases discharged from the power cylinders of the engine the fuel-to-air ratio of the air-fuel mixture produced in the carburetor;

(d) a control circuit operative to produce a first output signal variable with the detected fuel-to-air ratio and a second output signal indicative of changes of the detected fuel-to-air ratio between a first range higher than a predetermined target value and a second range lower than the predetermined target value, the first output signal being supplied to said valve means for controlling the flow rate of air through the valve means in such a manner that the fuel-to-air ratio of the air-fuel mixture to be produced in the carburetor is constantly regulated toward said predetermined target value; and

(e) transient fuel-delivery control means responsive to said second output signal for temporarily increasing or decreasing the pressure in said fuel delivery circuit for an incipient stage during a period of time for which the detected fuel-to-air ratio is changed from said first range to said second range or from said second range to said first range, respectively.

4,134,376
EXHAUST GAS RECYCLING SYSTEM

Takashige Tokushima, and Hideki Tanaka, both of Hiroshima, Japan, assignors to Toyo Kogyo Co., Ltd., Hiroshima, Japan

Filed Sep. 26, 1977, Ser. No. 836,903

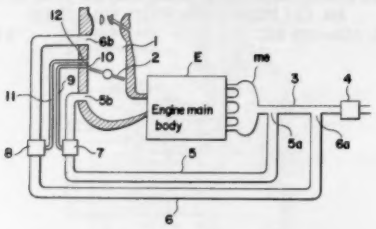
Claims priority, application Japan, Oct. 4, 1976, 51-119665

Int. Cl.² F02M *25/06*

U.S. Cl. 123—119 A **8 Claims**

1. An exhaust gas recycling system for use in an internal combustion engine which comprises a first exhaust gas recy-

cling passage for recycling part of exhaust gases to intake passage at downstream of a carburetor throttle valve, a second exhaust gas recycling passage for recycling part of the exhaust gases to the intake passage at upstream of the carburetor throttle valve, and first and second exhaust gas recycling flow rate control valves respectively provided in said first and second exhaust gas recycling passages, said first exhaust gas recycling



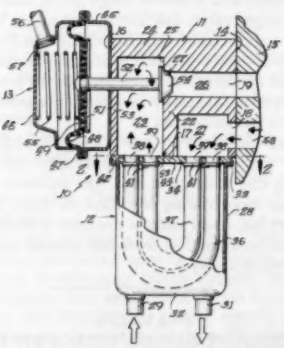
flow rate control valve being arranged to be opened when said carburetor throttle valve is opened to a degree larger than a first predetermined opening degree thereof, with said second exhaust gas recycling flow rate control valve being arranged to be opened when said carburetor throttle valve is opened to a degree larger than a second predetermined opening degree thereof which is larger than said first predetermined opening degree.

4,134,377

EXHAUST GAS RECIRCULATION CONTROL VALVE AND HEAT EXCHANGER

Robert G. Bamsey, Kitchener, and Dirk B. van der Male, Cambridge, both of Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Sep. 29, 1977, Ser. No. 837,784
Int. Cl.[2] F02B *27/00*
U.S. Cl. 123—119 A **12 Claims**



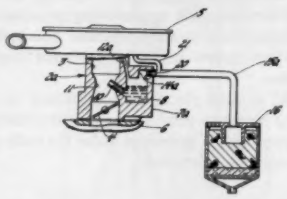
1. In combination with an intake manifold for an internal combustion engine, a heat exchanger and an exhaust gas recirculation control valve, the control valve including a valve body and a valve housing, the valve body connecting the heat exchanger and the valve housing to the intake manifold and having an exhaust gas inlet leading to the heat exchanger and an exhaust gas outlet for the cooled exhaust gases.

4,134,378

BALANCE TUBE FUEL BOWL VENT SYSTEM

Charles A. Kingsley, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 3, 1977, Ser. No. 838,648
Int. Cl.[2] F02M *37/00*
U.S. Cl. 123—136 **3 Claims**



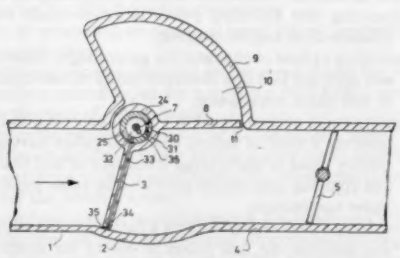
1. A carburetor for an internal combustion engine, said carburetor having a carburetor body with an induction passage therethrough including a venturi, a fuel bowl, a nozzle in the venturi of said carburetor body in fluid communication with said fuel bowl, an air cleaner disposed at the inlet end of said induction passage in said carburetor body, an internal vent passage extending upward from the upper part of said fuel bowl to a position in said air cleaner adjacent to the inlet end of said induction passage for venting fuel vapor from said fuel bowl into the inlet end of said induction passage through said carburetor during engine operation and, an always open external vent passage extending from the upper part of said fuel bowl and being connectable to a vapor storage canister and being in flow communication with said air cleaner adjacent to the said inlet end of said induction passage, said internal vent passage having a cross sectional flow area greater than two times larger than the minimum cross sectional flow area of said external vent passage whereby changes in pressure in the vapor storage canister will tend to result in air cleaner depression changes with minimal differential pressure between said fuel bowl and said air cleaner.

4,134,379

FUEL INJECTION SYSTEM

Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 26, 1976, Ser. No. 670,704
Claims priority, application Fed. Rep. of Germany, Apr. 8, 1975, 2515195
Int. Cl.[2] F02M *39/00, 7/00*
U.S. Cl. 123—139 AW **10 Claims**



1. A fuel injection system for an internal combustion engine, said engine being of the spark-plug ignited type and including an air induction tube, comprising:

a bearing shaft extending through said air induction tube with its long axis extending transverse to the direction of air flow through said induction tube, a bushing rotatably mounted on said shaft in concentric relationship there-

with, a baffle plate fixedly mounted on said bushing inside said induction tube for rotation with said bushing;

elastic means for urging said baffle plate to oppose the force exerted on it by the air flow through said induction tube;

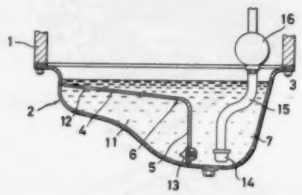
said shaft and said bushing include cooperating fuel metering apertures for the flow of fuel therethrough, the quantity of fuel being metered depending on the relative opening provided by said cooperating apertures and being dependent on the amount of pivoting of said baffle plate due to the force of the air flowing in said induction tube, said baffle plate including conduit means or expelling said metered fuel into said induction tube, and a differential pressure valve for maintaining a constant fuel pressure difference across said metering apertures.

4,134,380

AUTOMOBILE OIL PAN ASSEMBLY

Takao Niwa, and Yasushi Sato, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken, Japan

Filed Jan. 18, 1977, Ser. No. 760,259
Claims priority, application Japan, Nov. 22, 1976, 51-139471
Int. Cl.[2] F02M *17/00*
U.S. Cl. 123—142.5 R **5 Claims**



1. An oil pan assembly for an internal combustion engine comprising: means defining an oil pan containing oil therein; partition wall means dividing said oil pan into a first oil pan chamber and a second oil pan chamber; oil pump means; means including a strainer communicating said first oil pan chamber with said oil pump means, said oil pump means operating to deliver oil from said first oil pan chamber to an internal combustion engine; and temperature responsive valve means located in said partition wall means for opening and closing flow communication between said first and second oil pan chambers; said valve means being set to remain closed to block flow communication between said first and second oil pan chambers when the temperature of oil within said oil pan is below a predetermined temperature level thereby causing only oil from said first oil pan chamber to be drawn by said pump means for delivery to said internal combustion engine; said valve means operating to open to establish flow communication between said first and said second oil pan chambers when the temperature of oil within said oil pan rises above said predetermined temperature level thereby to permit oil from said second chamber to flow into said first chamber for circulation to said internal combustion engine.

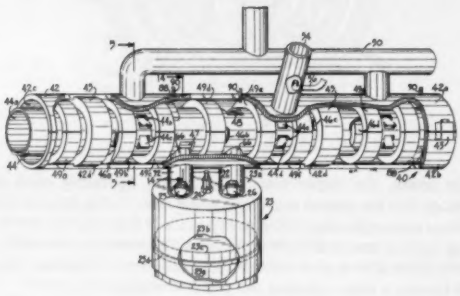
4,134,381

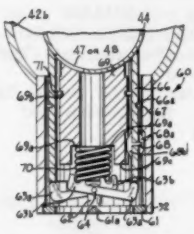
ROTARY VALVE ENGINE APPARATUS

Mark J. Little, 44 Spanish Oaks, Oakdale, Minn. 55109

Filed Aug. 30, 1977, Ser. No. 828,984
Int. Cl.[2] F01L *7/00*
U.S. Cl. 123—190 E **22 Claims**

20. The combination with a rotary valve internal combustion engine of the type comprising: and engine body with at least one internal combustion cyclinder; a valve housing defining a valve bore extending transversly of said cylinder; tube means for connecting in fluid communication one end of said internal combustion cylinder with said valve bore; a piston operable in said cylinder; a cylindrical rotary valve mounted for rotation within said valve bore, said rotary valve defining an inner axially extending cylindrical valve cavity subdividing into intake and exhaust chambers and having intake and exhaust ports through the walls of said rotary valve, said rotary valve being operable to control fluid communication with said cylinder through said intake and exhaust ports and said tube means; means for rotatably mounting said rotary valve in said valve bore; means for providing combustible gaseous fluids to said intake chamber; and means for directing gaseous exhaust fluids from said exhaust chamber; of a double plunger assembly mounted within said tube means for providing uniform tight sealing engagement between said rotary valve and said internal combustion chamber, one each of said double plunger assemblies being mounted to cooperatively respectively address each of said intake and exhaust ports of said rotary valve, each of said double plunger apparatus comprising:





(a) an outer plunger member slidably mounted within said tube means and defining an internal cavity longitudinally extending therethrough, said outer plunger member having an arcuately shaped end configured to slidably engage the outer cylindrical surface of said rotary valve;

(b) an inner plunger member slidably mounted within the internal cavity of said outer plunger member and defining an internal cavity longitudinally extending therethrough, said inner plunger member having an arcuately shaped end configured the slidably engage the outer cylindrical surface of said rotary valve;

(c) spring means operatively engaging both said inner and said outer plunger members for urging the arcuate ends respectively thereof into matingly tight sliding engagement with said rotary valve.

4,134,382

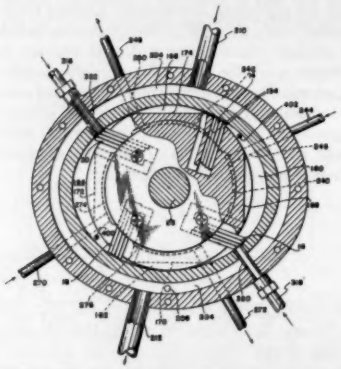
ROTARY INTERNAL COMBUSTION ENGINE

Albert A. Southard, R.R. #3, Council Grove, Kans. 66846

Continuation-in-part of Ser. No. 522,500, Nov. 11, 1974, Pat. No. 3,994,641, which is a continuation-in-part of Ser. No. 322,430, Jan. 10, 1973, abandoned. This application Nov. 29, 1976, Ser. No. 745,555
Int. Cl.[2] F02B *55/16*
U.S. Cl. 123—243 **16 Claims**

1. In a method of operating a rotary engine of the type wherein an even number of circumferentially spaced operating

zones are caused to orbit an axis and sequentially pass through an even number of fixed sectors with each zone alternatively increasing and decreasing in volume as it passes through successive sectors, and wherein a four-phase operating cycle of essentially four 90° degree phases is effected relative to each of



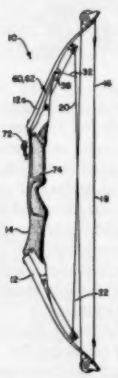
the zones, the improvement comprising operating pairs of zones, that are spaced apart by a single intervening zone, out of phase with each other 180 plus 360 times N degrees, the operating pairs of zones, that are immediately adjacent to each other, out of phase with each other 90 plus 180 times N degrees, with N having a value selected the positive integers.

4,134,383

DRAWING INDICATOR FOR BOWS

John D. Flood, Stow, Ohio, assignor to Charles R. Iden, Akron, Ohio, a part interest

Filed Jan. 13, 1977, Ser. No. 759,003
Int. Cl.² F41B 5/00
U.S. Cl. 124—24 R **4 Claims**



1. The combination of a bow having a bowstring, a bow frame, a sighting area and an arrow shelf, and a bow drawing indicator comprising

an electrical power unit mounted on said bow frame and including two different power circuits connecting to a multi-contact switch device having a spring arm extending therefrom for movement in one direction to successively contact and close said two different power circuits,

a flexible member connecting said arm to said bowstring to move said operating arm successively to circuit closing positions with tensioned drawing movement of said bowstring as it is moved away from the bow frame,

a frame device mounting a pair of indicator lights thereon secured to said bow frame, and

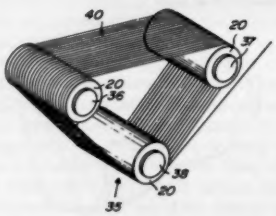
said power unit having said power circuits connect individually to said lights and switch device, said spring arm being bent to close and actuate said power circuit for one light initially on tensioning said bowstring to move it away from the bow frame, and to close the said power circuit to said second light on continued drawing of said bowstring away from the bow frame to produce further bending of said spring arm, said power unit and said frame device being mounted in spaced vertical relation on said bow frame.

4,134,384

WIRE SAW WITH ROTATABLE GUIDE SLEEVE

Hugo W. Schafft, Des Plaines, and Ernest Jaanson, Arlington Heights, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 16, 1977, Ser. No. 833,846
Int. Cl.² B28D 1/08
U.S. Cl. 125—21 **5 Claims**



1. In a machine for accurately cutting brittle materials, said machine having a web with a plurality of wires between a plurality of elongated, parallel, cylindrical rotatable shafts wherein a predetermined portion of the web defines a cutting area, the wires of the web being under a predetermined tension and undergoing reciprocating movements, a rotatable sleeve fixedly mountable by press fitting to each of the respective shafts comprising:

a first tubular member embracing each of the respective shafts;

a second tubular member embracing said first member; and

a third tubular member embracing said second member and accurately spacing the plurality of wires of the web at a predetermined distance from one another, said second member being relatively harder than said and third members for imparting dimensional stability from said second member to said first and third members to substantially prevent transverse expansion of said third member in response to radial stress from the wires of the web.

4,134,385

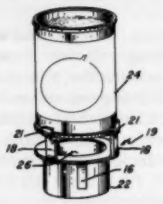
STOVE FRAME ADAPTER

Owen H. Barter, 14 Raymond St., Manchester, Mass. 01944

Filed Jan. 28, 1976, Ser. No. 653,112
Int. Cl.² F24C 5/20
U.S. Cl. 126—38 **3 Claims**

1. A stove assembly comprising in combination, a stove frame adapter formed from a malleable material and having an annular, planar, horizontal member with an opening therein, a heat supply container with an opening in the top thereof and an article to be heated, said adapter having a plurality of opposed arms extending from the outer edge of said annular horizontal surface, which arms have bends upwardly to support said article above said frame, each of said opposed arms including a generally vertical portion extending from said firstmentioned bend to further bends forming a generally horizontal surface and a following generally vertical portion, said frame adapter also having at least one arm which has a bend downwardly in

close clearance with a side of said heat supply container to support said annular horizontal member on said heat supply container so that the frame adapter opening is aligned with the opening of said container to admit heat therethrough to said article, said frame adapter being supported solely by said heat



container, the arms of said stove frame adapter are bendable to fit different sized articles and containers and also bendable to render said adapter flat for ready storage, said frame adapter being reuseable with other heat supply containers and other articles.

4,134,386

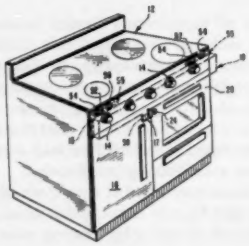
STOVE SWITCH COVER LOCK

Fred Miguel, 300 E 150 St., Apt. #1, Bronx, N.Y. 10451

Filed Aug. 8, 1977, Ser. No. 822,524

Int. Cl.[2] F24C *3/12*

U.S. Cl. 126—42 **10 Claims**



1. A cover for preventing accidental movement of a plurality of controls extending in a row out of a control panel of a stove, said cover comprising:

a. a lock adapted to be mounted on said control panel and having a rotatable latch extending behind said control panel,

b. an elongated housing having a length in excess of the distance between the endmost controls of said row and including top and bottom walls, a front wall, and end walls, said housing being open, the rear edges of said top and bottom walls and said end walls lying in substantially a common plane,

c. mounting means operatively associated with said top wall of said housing for hingeably removably securing said housing to said control panel of said stove for pivotal movement between a closed position in which said cover fully encloses said controls to an open position in which access to said controls is obtainable,

d. a locking element mounted on said bottom wall and extending forwardly of said rear edge, said locking element including a slot extending transversely within said locking element, and

e. said locking element adapted to be received within an aperture on said control panel adjacent said lock in the closed position of said cover, and said latch extending within said slot in the locked position of said lock, such that said housing is retained in said closed position until said lock is opened and said housing may be pivoted upwardly or removed from the stove.

4,134,387

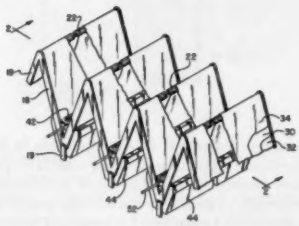
SOLAR ENERGY CONCENTRATOR

Eric Tornstrom, West Acton, Mass., assignor to Mobil Tyco Solar Energy Corporation, Waltham, Mass.

Filed Mar. 28, 1977, Ser. No. 781,839

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **12 Claims**



1. A solar energy concentrator comprising:

(A) a rigid frame comprising a plurality of spaced upper and lower guide members, and

(B) a flexible sheet material which is reflective to light supported by said frame, said flexible sheet material being threaded alternately over said upper guide members and under said lower guide members in repeating fashion so as to form a reflective ridged surface which defines a plurality of troughs.

4,134,388

SOLAR COLLECTOR COMPRISING A U-SHAPED ABSORBER

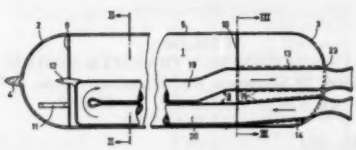
Reinhard Kersten, Aachen-Kornelimünster, and Egbert Kuhl, Aachen, both of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1976, Ser. No. 689,945

Claims priority, application Fed. Rep. of Germany, May 30, 1975, 2523965

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—270 **4 Claims**



1. A solar collector which comprises a sealed, evacuated, transparent cover tube having a cylindrical portion circular in cross-section and provided on its inner surface with a reflector extending, in a cross-sectional view, over an angle of at least 180°, and a U-shaped tubular absorber for transferring heat from incident solar radiation to a heat transport medium, said U-shaped tubular absorber being enclosed in a vacuum-tight manner in said cover tube and being positioned between the cover tube axis and the reflector, and the central plane of the U-shaped tubular absorber including the centre lines of its legs and coinciding with the symmetry plane of the reflector.

4,134,389

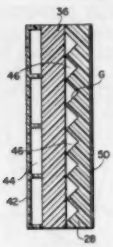
SOLAR ENERGY COLLECTOR

Michael McClintock, 162 Commercial St., Boston, Mass. 02109

Filed May 2, 1977, Ser. No. 795,167

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **3 Claims**



1. A solar energy collection device operable in both active and passive modes, comprising at least one face panel and a base panel each formed of generally non solar energy absorbent plastic materials structurally distortable above a predetermined temperature level positioned in opposed spaced relationship to each other and forming a fluid chamber therebetween, said base panel defining lower portions of said chamber, said cover being at least translucent to permit entry of solar energy into said chamber, means for sensing the amount of solar energy available from said device, pump means for passing an optically dense solar heat absorbent fluid under positive pressure through said chamber wherein said fluid will absorb heat from solar energy passing into said chamber, means for removing said fluid from said chamber either when it is not desired to absorb solar energy in said fluid in the active operational mode of said device or upon failure of said pump means, said base panel also being at least translucent such that sunlight will pass directly through said panels and said chamber at those times when said optically dense fluid is removed from said chamber so as to enable said device to operate in said passive mode while simultaneously thereby maintaining the temperature of said structurally distortable panels below said predetermined temperature, said base having an upstanding peripheral edge in liquid sealing contact with portions of said cover and further having a plurality of parallel and spaced inwardly directed grooves formed therein, said cover further integrally connected and accordingly sealingly engaged with base portions between said grooves so as to form separate generally straight, non-serpentine flow paths which are capable of receiving said heat absorbent fluid under pressure from said pump means, and manifold means at each end of said individual flow paths for simultaneously directing said fluid into and out of all of said flow paths.

4,134,390

SOLAR HEAT ENERGY TRANSFER SYSTEM

Davis I. Rawal, 25 Maybrook Rd., Waterbury, Conn. 06708

Filed Mar. 4, 1976, Ser. No. 664,010

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **10 Claims**

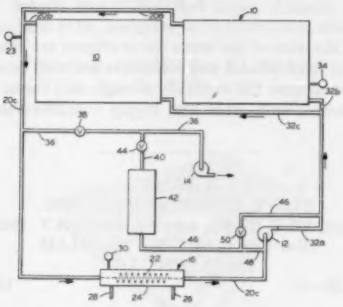
1. A solar heating system comprising:

A. solar heating panel means having a liquid inlet, a vapor outlet, and passage means extending therebetween, said solar heating panel means absorbing heat from the sun to convert liquid contained within said passage means to vapor, said solar heating panel means comprising a laminate of two sheets of metallic material cooperatively configured to define said passage means therebetween which include a plurality of passages interconnecting a plurality of cavities enlarged relative thereto, and a housing within which is mounted said laminate, said housing having a translucent surface generally coextensive with and spaced from said laminate and insulating material disposed therewithin adjacent the surface of said laminate opposite said translucent surface;

B. fluid pump means having an inlet side and an outlet side;

C. first conduit means having one end connected to said vapor outlet of said solar heating panel means and the other end connected to said inlet side of said fluid pump means;

D. condensng means having a fluid inlet and a fluid outlet and disposed along a portion of said first conduit means between said vapor outlet of said panel means and said inlet side of said fluid pump means, said condensing means being adapted to have a heat exchange fluid passed therethrough in indirect heat exchange with vapor in said portion of said first conduit to condense such vapor with



latent heat of vaporization thereof being transferred to said heat exchange fluid, said first conduit serving to conduct liquid so condensed to said fluid pump inlet;

E. second conduit means having one end connected to said outlet side of said pump means and the other end connected to said liqiud inlet of said solar heating panel means to conduct liquid condensed in said condensing means back to said solar heating panel means;

F. vacuum means connected at a point along a path, defined at least in part by said first conduit means, between said passage means of said solar heating panel and said condensing means to provide a reduced pressure acting on liquid being vaporized therein whereby the normal vaporization temperature of said liquid is reduced.

4,134,391

SOLAR COLLECTOR COMPRISING AN ELONGATE DEWAR VESSEL

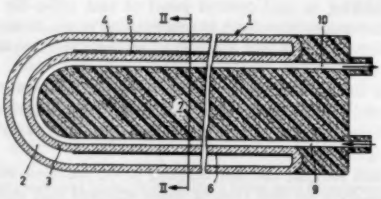
Faramarz Mahdjuri, Aachen; Horst Hörster, Roetgen, and Reinhard Kersten, Meischenfeld, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 9, 1977, Ser. No. 795,008

Claims priority, application Fed. Rep. of Germany, May 19, 1976, 2622252

Int. Cl.[2] F24J *3/02*

U.S. Cl. 126—271 **6 Claims**



1. A solar collector which comprises an elongate Dewar-

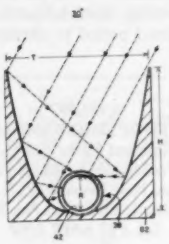
type transparent vessel formed of an outer cylindrical tube closed at one end, an inner cylindrical tube having an outer diameter less than the inner diameter of the outer tube and also closed at one end, the closed end of the inner tube being opposite and spaced from the closed end of the outer tube, the other ends of both tubes being sealed together to provide an evacuated space between said tubes, and an elongate cylindrical solid body extending lengthwise into the inner tube and having a rounded inner end spaced from the closed end of the inner tube, said body being centrally positioned within the inner tube and having a diameter less than the inner diameter of the inner tube whereby an annular space is formed between the inner tube and the body, said body being provided with two diametrically opposed lengthwise flanges each extending to the inner surface of the inner tube and thereby sub-dividing the annular space into a supply duct and an outlet duct for conduct of a heat-transport medium, said body being shaped at its outer end so as to form a water-tight joint with the sealed other ends of the outer tube and the inner tube, the outer surface of the inner tube being provided over at least part of its cylindrical circumference with a solar radiation-absorbing layer, the heat obtained from absorbed solar radiation during operation being transferred to the heat-transport medium conducted through the supply duct and the outlet duct, and the sum of the cross-sectional areas of the supply duct and the outlet duct being less than one-quarter of the inner cross-sectional area of the inner tube.

4,134,392

SOLAR ENERGY COLLECTION

Anthony W. Livermore, Chelmsford, and Daniel W. Noren, Wakefield, both of Mass., assignors to Spectrum Conversion, Inc., Wakefield, Mass.

Filed Sep. 19, 1977, Ser. No. 834,326
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **13 Claims**



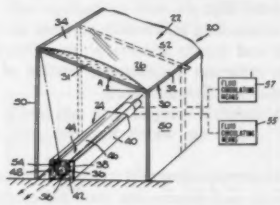
1. A non-focusing collector for concentrating electromagnetic radiation into a receiver zone comprising an elongate trough-shaped body having an inner reflective surface of substantially uniform transverse cross-section, said cross-section concentrating incident radiant energy into an included receiving area with a maximum dimension R, having a height H and a throat opening T, and being defined by half curves on either side of the positive X axis substantially conforming, respectively, to the cartesian equations $Y = AX^b$ and $Y = -AX^b$, said half curves when extended substantially meeting in a common vertex at the intersection of the X and Y axes, and wherein for each equation X is positive, b is about 0.30 plus or minus 0.15, A is about 0.5 to 2.5; the ratio of H to T being between about 0.5 to 2.0, and the concentration ratio T to R being at least about 3.0, said receiver zone being a volume of uniform cross-section which coincides with said receiving area.

4,134,393

SOLAR ENERGY COLLECTION

Virgil Stark, 936 Fifth Ave., New York, N.Y. 10021; Alexandre Vayda, Lausanne, Switzerland, and Paul Rousset, Cannes, France, assignors to Virgil Stark, New York, N.Y.

Filed Nov. 30, 1976, Ser. No. 746,065
Claims priority, application France, Jul. 9, 1976, 76 20986; Oct. 8, 1976, 76 30248
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **56 Claims**



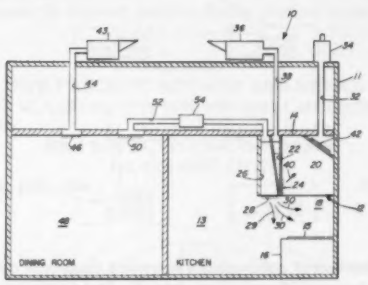
47. An elongated collector for converting concentrated solar energy into heat energy comprising an elongated container including at least two elongated conduits for passing liquids therethrough and at least two different liquids, said conduits and container having substantially parallel axes, said container having an elongated opening having an axis substantially parallel to that of the container, said conduits being disposed so that an inner first of said conduits containing a first liquid is enclosed by an outermost conduit which is transparent at least in part and contains a second liquid therein, the liquids in said inner and outermost conduits being in a heat exchanging relationship, said container including said elongated opening and transparent portion of said outermost conduit being aligned to permit passage of solar energy through said opening and transparent portion, whereby an elongated focus of concentrated solar energy may be located substantially on and substantially along the length of said inner conduit.

4,134,394

AIR VENTILATION SYSTEM

James T. Otenbaker, 53415 Starlite, Utica, Mich. 48087

Filed Feb. 24, 1977, Ser. No. 771,640
Int. Cl.[2] F24C *15/08*; F23J *11/00*
U.S. Cl. 126—299 D **5 Claims**



1. An air ventilation system for a cooking exhaust hood adapted to be disposed in a building having an air treating means, said system comprising:

an exhaust hood defining a first air space within the interior of said hood, said hood being adapted to be positioned above cooking equipment such that the space above the cooking equipment defines a second air space between said hood and said cooking equipment;

said hood having a first opening registering with said second air space and communicating said first air space with said

second air space, said first opening being disposed in a level plane;

means associated with said hood for exhausting a predetermined amount of air from said first and second air spaces to exhaust cooking vapors, odors, fumes, smoke and the like from said spaces, said hood having a second opening communicating with said first air space, said second opening being in an upright plane;

passage means integral with said hood for communicating air to said second opening;

a source of fresh air;

duct means connecting said source of fresh air to said passage means and thus to said first air space via said second opening to replenish a substantial portion of the air exhausted from said first air space;

a distribution manifold integral with said hood;

a source of treated air which bypasses said air treating means;

duct means communicating said treated air to said distribution manifold; said distribution manifold extending longitudinally throughout substantially the entire longitudinal dimension of said exhaust hood, said manifold having an air curtain register disposed in a substantially horizontal plane which is adjacent to said first hood opening; and

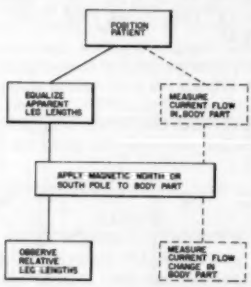
said air curtain register having means for directing said treated air downwardly with a sufficient velocity to create an air curtain in front of said cooking equipment, a portion of said treated air being communicated to said air space above said cooking equipment for replenishing the air exhausted from said second air space.

4,134,395

METHOD OF USING MAGNETIC FIELDS TO CONDUCT A SCREENING DIAGNOSTIC EXAMINATION

Albert R. Davis, Green Cove Springs, Fla., assignor to Biomagnetics International, Inc., Jacksonville, Fla.

Filed Dec. 29, 1976, Ser. No. 755,340
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—2 R **14 Claims**


POSITION PATIENT
EQUALIZE APPARENT LEG LENGTHS
MEASURE CURRENT FLOW IN BODY PART
APPLY MAGNETIC NORTH OR SOUTH POLE TO BODY PART
OBSERVE RELATIVE LEG LENGTHS
MEASURE CURRENT FLOW CHANGE IN BODY PART

1. A method of conducting a screening diagnostic examination to detect malfunctioning parts of a body comprising the steps of:

(a) applying to the body under examination a single polarity magnetic pole, said magnetic pole having a strength such that the unipolar magnetic energy at the body part under examination is in the range 300 to 10,000 gauss;

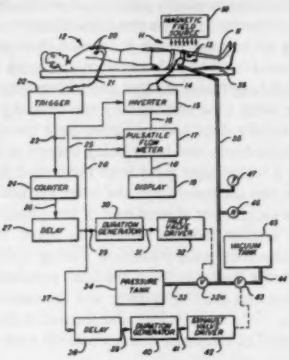
(b) observing for the existence of a predetermined physical manifestation of the intereaction between any malfunctioning body part and the applied unipolar magnetic energy, the existence of said physical manifestation indicating a malfunctioning body part at the site of the magnetic pole when said manifestation is observed.

4,134,396

METHOD AND APPARATUS FOR DEVELOPING INTERMITTENT VENOUS BLOOD FLOW AND MEASURING TOTAL BLOOD FLOW

Henri G. Doll, New York, N.Y., assignor to Doll Research, Inc., New York, N.Y.

Filed May 23, 1977, Ser. No. 799,219
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—2.05 F **13 Claims**



1. A method for measuring blood flow in a limb of a living being comprising:

(a) detecting blood flow signals at a first location along a limb of a living being;

(b) occluding the venous system of the limb at a position as close as possible to the first location, said occlusion being maintained for a first predetermined period of time while permitting systolic flow in the arterial system during said first period;

(c) unblocking the venous system at said position for a second predetermined period of time that is long enough to allow a release of part of the blood that was pooled in the venous system on the distal side of said position during said first period; and

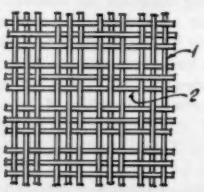
(d) cumulatively storing the detected blood flow signals for at least said second period to obtain a total blood flow value.

4,134,397

ORTHOPEDIC BANDAGE

Spiros Gianakakos, Highland Park; Neil H. Rosen, Willingboro, both of N.J., and Paul Siminuk, Elkins Park, Pa., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jun. 2, 1977, Ser. No. 802,692
Int. Cl.[2] A61F *5/04*
U.S. Cl. 128—90 **11 Claims**



1. An orthopedic bandage which includes a flexible carrier comprising a woven fabric, said fabric being characterized as a mock leno weave, which is formed from a yarn having an initial modulus of greater than 5,000,000 lbs./in.^{2}, and a cast forming composition supported thereon, said cast forming composition comprising a monomer selected from the group

consisting of diacetone acrylamide, n isopropyl acrylamide and mixtures thereof.

4,134,398

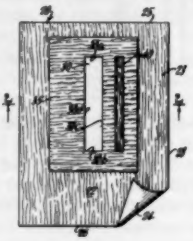
SURGICAL DRAPE HAVING IMPROVED RETAINING MEANS

George W. Scrivens, Edison, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation-in-part of Ser. No. 663,958, Mar. 3, 1976, Pat. No. 4,033,341. This application Mar. 4, 1977, Ser. No. 774,345

Int. Cl.[2] A61B *19/06*

U.S. Cl. 128—132 D 33 Claims



1. A surgical drape comprising a main sheet of flexible, drapable material, said main sheet having an upper surface, a lower surface, a top edge, a bottom edge, and a pair of opposed side edges; a reinforcing panel secured to the upper surface of said main sheet, said reinforcing panel having a first end edge, a second end edge, and a pair of opposed side edges; and a retainer member secured in hinge-like fashion to said drape, said retainer member comprising an elongated strip of generally flexible material and having a length equal to the distance between said first end edge of said reinforcing panel and said second end edge of said reinforcing panel.

4,134,399

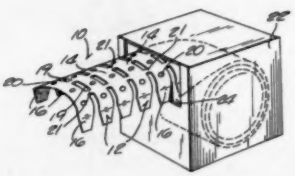
SKIN PROTECTIVE DEVICE

Alfred Halderson, Rte. 1, Valders, Wis. 54245

Filed Jun. 13, 1977, Ser. No. 806,152

Int. Cl.[2] A61F *13/00*

U.S. Cl. 128—132 R 8 Claims



1. A skin protective device adapted to be positioned adjacent a wound or sensitive skin area for protecting same against contact by foreign objects, said device comprising a one-piece unit including

a plurality of longitudinally spaced, generally U-shaped support elements, each including an elongated, laterally extending, raised central portion of sufficient length to span the wound or sensitive skin area and a pair of support legs which depend from the opposite ends of said central portion and are adapted to rest on the skin at locations beyond the wound or sensitive skin area for supporting said central portion thereabove, and

a pair of laterally spaced, longitudinally extending, and severable links connecting together the central portions of each adjacent pair of said support elements in closely spaced relationship, said connecting links having a width substantially less than the width of said support elements and having sufficient flexibility to permit flexing of said support elements relative to each other, thereby facilitating conformation of said device to the contour of the user's body in the vicinity of the wound or the sensitive area.

4,134,400

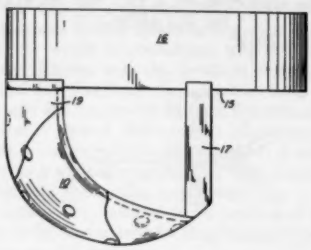
STRAP FOR A PROTECTIVE DEVICE

Frank J. DiMatteo, 501 Sunnyfield Dr., Monroeville, Pa. 15146

Continuation-in-part of Ser. No. 696,740, Jun. 16, 1976, Pat. No. 4,043,329. This application Mar. 18, 1977, Ser. No. 778,868

Int. Cl.[2] A61F *5/40*

U.S. Cl. 128—158 7 Claims



1. A jockstrap for holding an athletic cup to the body comprising:

a waist band;

two straps, one end of each being attached to the outer circumference of said waist band at points which are to the rear of a vertical line bisecting said waist band as viewed from the side;

a pouch constructed to hold the athletic cup attached to said straps, said pouch being attached at one end to said straps at a point near the rectum of the wearer which is to the rear of the vertical line bisecting said waist band as viewed from the side, said pouch having an opening to removably insert the athletic cup, said pouch being attached to said waist band at the opening thereof, and said pouch extending from the front of said waist band under the wearer's abdomen and between the wearer's legs to a point near the wearer's rectum; and,

said jockstrap constructed to hold said cup to the body of a wearer in constant position during physical exercise.

4,134,401

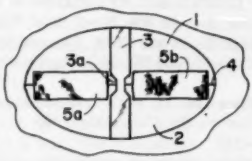
EYE-PATCHING METHOD AND DEVICE

Kenneth M. Galician, 4321 NW. 110 Ave., Coral Springs, Fla. 33065

Filed May 24, 1977, Ser. No. 799,950

Int. Cl.[2] A61F *13/12*

U.S. Cl. 128—163 9 Claims



1. A method of eye-patching comprising: bringing together the upper and lower eyelids to a closed state; fastening adhesively upper and lower eyelids' outer surfaces together in the closed state by adhesively applying thereto a narrow adhesive-coated strip of predetermined short length of sufficient length

to overlap a major portion of each of upper and lower eyelids and of predetermined narrow width sufficient to cover only a minor central portion of an eye-slit such that attachment of upper and lower eyelids is solely centered whereby reduced area of potential irritation and added comfort are obtained, said fastening including placing the narrow adhesive-coated strip at a point within about the central one-third of the length of the eyelids, whereby the eyelids are held in the closed state.

4,134,402

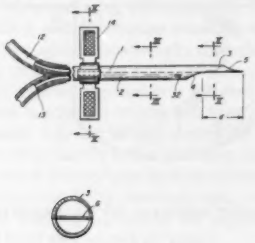
DOUBLE LUMEN HEMODIALYSIS CATHETER

Sakharam D. Mahurkar, 1926 W. Harrison St., Apt. 1809, Chicago, Ill. 60612

Continuation of Ser. No. 657,282, Feb. 11, 1976, abandoned. This application Jul. 5, 1977, Ser. No. 812,901

Int. Cl.[2] A61M *5/32*

U.S. Cl. 128—214 R **7 Claims**



1. A double lumen hemodialysis catheter, comprising a unitary straight tube the periphery of which in transverse cross section defines a single closed plane curve at any point along the entire straight tube, an internal divider extending along a longitudinal portion of said tube and forming said tube into a blood intake lumen and a blood return lumen, one end of said blood return lumen extending beyond the associated end of said blood inlet lumen a distance sufficient to prevent mixing of the returned blood with the blood taken in, the one end of said blood return lumen being beveled with the extending from the lumen periphery opposite said divider and rearward of the distal end toward the distal end and said divider, the associated end of said blood inlet lumen being beveled with the bevel extending from the lumen periphery opposite said divider and rearward of the associated distal end toward the associated distal end and said divider, the distal end of said blood inlet lumen terminating rearward of the juncture of the blood return lumen bevel and the associated lumen periphery each of said lumens defining blood flow paths parallel one to the other along the entire length thereof and at the ends thereof such that blood entering said intake lumen and blood leaving said return lumen enter and exit the associated blood vessel in a direction substantially parallel to the vessel wall.

4,134,403

EYE DROP DISPENSER ATTACHABLE POSITIONER

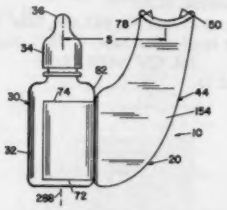
Frank R. Johnsen, Box 68, Rte. No. 2, Blair, Nebr. 68008; James R. Barta, 1821 Sherwood Cove, Fremont, Nebr. 68025, and Eugene J. Colner, 9006 W. 94th St., Overland Park, Kans. 66212

Filed Jun. 27, 1977, Ser. No. 810,633

Int. Cl.[2] A61M *1/00*

U.S. Cl. 128—233 **3 Claims**

1. An eye drop dispenser attachable positioner having a body provided with a rearward-terminal-end nose-engaging surface having a horizontal width sufficient for spanning across the upper portion of a human user's nose, said body having a forward portion provided with a side surface defining a bottle-facing side surface which is elongated forwardly and rearwardly and which is offset from the center between the sides of said nose-engaging surface so that when said nose-engaging surface is against the upper portion of the nose of the average adult user and an eye drop medicine dispenser bottle is disposed with its closest side adjacent to said bottle-facing side surface of said body, then the center of the bottle will be disposed approximately on a horizontal line directly forwardly from the eye of an average adult user, and means for attaching



an eye dropper medicine bottle to the said bottle-facing side surface of said body, said attaching means having an adhesive bonding means for facing said bottle and characterized by being removable from said bottle without the destruction of said positioner and with the possibility of the reuse of said attaching means on another bottle.

4,134,404

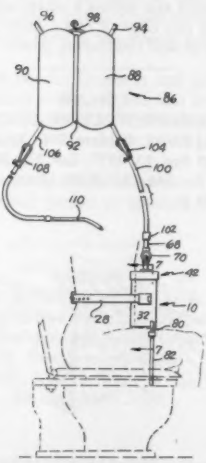
PORTABLE COLOSTOMY KIT

Clarence B. Williams, Jr., 2009 Broad St., Tallahassee, Fla. 32301

Filed Apr. 29, 1977, Ser. No. 792,416

Int. Cl.[2] A61F *5/44*

U.S. Cl. 128—283 **3 Claims**



1. A colostomy kit, which comprises:

a relatively small, portable waste receptacle open at the top and having parallel planar side walls and a rear wall extending between said side walls and curved so as to fit adjacent the abdomen of a user;

a substantially circular opening in said rear wall sized to fit about a colostomy of the user;

belt means pivotally mounted to said side walls for fastening said waste receptacle about the user;

a removable cover having a substantially planar top wall with an inlet conduit formed therein and side walls shaped proportionately to those of said waste receptacle so as to be fitted over said open top in such a manner that the side walls of said cover are positioned on the outside of the side walls of said receptacle;

a fluid container unit comprising a first compartment for containing a relatively cool flushing fluid, a second compartment for containing a relatively hot irrigating fluid, and thermal insulation positioned between and joining said first and second compartments;

a hanger connected to said fluid container unit to permit said flushing and irrigating fluids to be delivered therefrom by gravity;

a first hose connected between said first compartment and said inlet conduit on said cover for delivering flushing fluid to said receptacle;

a second hose connected to said second compartment and not connected to said first hose, said second hose terminating in a catheter for directing irrigating fluid into said colostomy; and

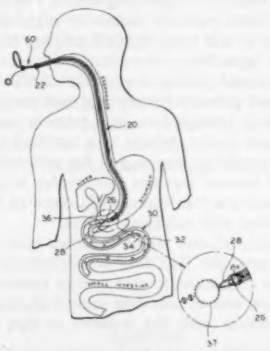
a substantially planar perforated plate positioned parallel to and underneath said top wall of said removable cover, said plate being connected to said top wall by vertical side walls that are shaped proportionately to said side walls of said cover and which are positioned in use on the inside of the side walls of said receptacle so as to form a substantially closed chamber for receiving flushing fluid from said inlet conduit and for directing same to the inner surfaces of said waste receptacle.

4,134,405

CATHETER AND INTESTINE TUBE AND METHOD OF USING THE SAME

Julie A. Smit, 1045 Hinman Ave., Evanston, Ill. 60202

Filed Jan. 10, 1977, Ser. No. 757,929
Int. Cl.[2] A61B *17/00*
U.S. Cl. 128—303 R **22 Claims**



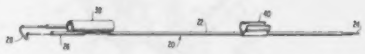
1. An instrument comprising an open-ended, thin-walled, balloon-like tube shaped to extend through at least a portion of an alimentary canal, the diameter and length of said tube being selected to treat an absorption-related disease, means for implanting said tube through a patient's mouth and throat, means for securing said tube entirely within the alimentary canal of an animal body for the purpose of passing digesting food solids and thereby treating absorption-related diseases, whereby a patient may consume whole food through the mouth, said whole food becoming partially digested in the stomach before coming into contact with said implanted instrument; and means for controlling a transfer of food chemicals from said digesting food solids through the walls of said implanted instrument to the alimentary canal by preventing or altering the transfer of said food chemicals between said implanted instrument and the walls of the alimentary canal.

4,134,406

CUTTING LOOP FOR SUCTION RESECTOSCOPES

Jose J. Iglesias, 1341 North Ave., Elizabeth, N.J. 07208

Continuation of Ser. No. 733,896, Oct. 19, 1976, abandoned.
This application Oct. 7, 1977, Ser. No. 840,247
Int. Cl.[2] A61B *17/32*
U.S. Cl. 128—303.15 **1 Claim**



1. A cutting loop for a resectoscope of the type which includes an elongated tubular sheath having distal and proximal ends, a first tube within and concentric with and spaced from the sheath and defining with the sheath an elongated annular outlet conduit for fluid from the operative field, an optical telescope within and concentric with the first tube and extending longitudinally thereof, and a second tube surrounding and engaging the telescope to provide support to it and defining with the first tube an annular passage for clear fluid flowing to the operative field, the cutting loop comprising;

a. an elongated stem adapted to be positioned below and parallel to the second tube for longitudinal movement in a direction parallel thereto,

b. an electrode wire including:

(1.) a first part extending through and electrically insulated from the inner surface of the stem,

(2.) a generally loop-shaped second part extending beyond the distal end of the stem and comprised of:

i. a pair of spaced electrically insulated arms adapted to extend along opposite sides of the telescope, and

ii. an uninsulated cutting element constituting a continuation of each arm and position in the field of vision of the telescope,

c. a tubular member mounted superiorly on the distal end of the stem with its axis parallel to the stem and adapted to surround and engage the second tube to guide the cutting loop in its longitudinal reciprocating movement, and

d. guide means for slidably maintaining the stem in spaced relation to the second tube during sliding insertion of the cutting loop into a resectoscope, comprising a member of arcuate cross sectional shape secured to the stem superiorly thereof with its axis parallel to the stem, the cross sectional size and shape of the member being such that its inner surface will be in contact with and surround the outer surface of the second tube sufficiently to prevent lateral movement of the stem with respect to the second tube during such insertion, the member being positioned proximal to the tubular member mounted on the distal end of the stem.

4,134,407

EXTERNAL PRESSURE-VOLUME MONITOR FOR ENDOTRACHEAL CUFF

James O. Elam, 6723 S. Euclid, Chicago, Ill. 60649

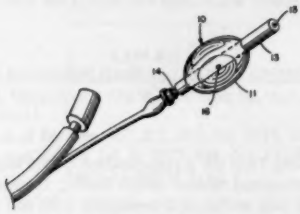
Filed Mar. 25, 1977, Ser. No. 781,177
Int. Cl.[2] A61M *25/00*
U.S. Cl. 128—351 **4 Claims**

1. A monitoring accessory for use with a cuffed endotracheal tube adapted for connection to a proximal inlet of a cuff inflation channel of said tube comprising:

a thin-walled, collapsible-expandable elastic balloon, said balloon having an injection port and freely communicating with said endotracheal cuff through said cuff inflation channel of said endotracheal tube; and

a rigid cage having a pair of spaced end portions joined by a plurality of longitudinally extending struts defining a plurality of windows, said windows being disposed about the periphery of said cage to provide a volume reference

for determining the state of inflation of said endotracheal cuff, said cage housing said balloon therein and defining a cavity having a shape generally conforming to the freely inflated shape of said balloon and having a fixed volume which is fully occupied by said balloon under a normal level of inflation of said endotracheal cuff, said balloon



being disposed within said cavity in a manner permitting visual and fingertip perception through said windows of any departure from said normal level of inflation of said endotracheal cuff;

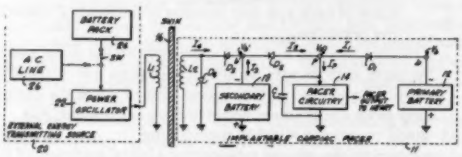
whereby said monitoring accessory serves as a simple system for continuously monitoring the unseen condition of said endotracheal cuff.

4,134,408

CARDIAC PACER ENERGY CONSERVATION SYSTEM

Robert R. Brownlee, State College, and Frank O. Tyers, Hershey, both of Pa., assignors to Research Corporation, New York, N.Y.

Filed Nov. 12, 1976, Ser. No. 741,491
Int. Cl.[2] A61N *1/36*
U.S. Cl. 128—419 PS **7 Claims**



1. A system for selectively powering a cardiac pacer implanted in a patient, which system comprises:

electromagnetic energy transmitting means disposed externally of said patient for transmitting energy to said pacer and comprising:

a large-diameter electromagnetic energy transmitting coil;

furniture means for housing said large-diameter coil; and

means for powering said large-diameter coil; pacer means in said pacer for producing a cardiac pacing electrical output;

primary battery power means in said pacer for providing a voltage to power said pacing means;

implantable means for detecting electromagnetic energy transmitted from said external energy transmitting means and comprising receiving coil means loosely coupled to said large-diameter coil for receiving electromagnetic energy therefrom;

rectifying means, comprising a first semiconductor diode operatively connected between said energy receiving means and said pacing means, for providing a rectified D.C. voltage to said pacing means whenever sufficient energy is received by said receiving means to produce a rectified D.C. voltage of greater magnitude than the voltage provided to said pacing means by said primary battery power means; and

unidirectional current conducting means, comprising a second semiconductor diode operatively connected between said primary battery power means and said pacing means, for conducting current between said primary battery power means and said pacing means to supply a D.C. voltage from said primary battery power means to said pacing means in the absence of a rectified D.C. voltage from said rectifying means, and for preventing the conduction of current between said pacing means and said primary battery power means in the presence of a rectified D.C. voltage provided from said rectifying means.

4. A system for extending the life of an implantable cardiac pacer of the type comprising:

pacing means in said pacer for producing a cardiac pacing electrical output; and

an internal primary battery power source having an initial output voltage higher than the operating voltage of said pacing means;

in which the improvement comprises:

a series-type voltage regulator means, connected between said primary battery power source and said pacing means, for constantly providing said operating voltage to said pacing means thus reducing the current drain from said primary battery power source while said output voltage is higher than said operating voltage.

6. A system for selectively powering an implantable cardiac pacer, having an internal primary battery power source, from an external transmitting source, which system comprises:

pacing means in said pacer for producing a cardiac pacing electrical output;

implantable energy receiving means for detecting electromagnetic energy transmitted from said external energy source, which means comprises an electromagnetic energy receiving coil;

rectifying means comprising a first semiconductor diode operatively connected between said energy receiving means and said pacing means, for providing a rectified D.C. voltage to said pacing means whenever sufficient energy is received by said receiving means to produce a rectified D.C. voltage of greater magnitude than the voltage provided to said pacing means by said internal primary battery;

unidirectional current conducting means, comprising a series-type voltage regulator means for regulating the voltage applied to said pacer by said primary battery power source and operatively connected between said primary battery and said pacing means, for conducting current between said primary battery and said pacing means to supply a D.C. voltage from said primary battery to said pacing means in the absence of a rectified D.C. voltage from said rectifying means, and for preventing the conduction of current between said pacing means and said primary battery in the presence of a rectified D.C. voltage provided from said rectifying means;

a second semiconductor diode in series with said energy receiving coil and said first semiconductor diode and operatively connected to said energy receiving coil at a first junction and to said first semiconductor diode at a second junction with like polarity to that of said first diode; and

a secondary rechargeable battery power source, of substantially lower energy capacity than said primary battery power source, operatively connected to said second junction and having a fully charged voltage which exceeds the no-load voltage of said primary battery power source.

4,134,409

SMOKING APPARATUS

Joseph H. McManus, Katy, Tex., assignor to Marymac Industries, Inc., Katy, Tex.

Filed Oct. 22, 1976, Ser. No. 734,806
Int. Cl.[2] A24F *1/14, 1/30*
U.S. Cl. 131—173 **2 Claims**

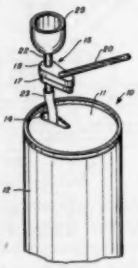
1. A smoke filtering apparatus for use with a container having a generally keyhole shaped opening in the top thereof and containing a filtering medium comprising:

a generally flexible stopper member having a body portion

of the same general configuration as that of said keyhole shaped opening for disposing in and sealingly engaging the peripheral edges of said keyhole shaped opening, said stopper member having first and second passageways therethrough, and including a flange having the same general configuration of said keyhole shaped opening but being somewhat larger and engageable with the top of said container adjacent said keyhole shaped opening to restrain movement of said stopper into said keyhole shaped opening,

a first flexible tubular member extending into said first passageway,

a second tubular member having a rigid portion extending through said second passageway, and a flexible portion connected to said rigid portion and extending into said



container for a distance sufficient for one end of said second tubular member on said flexible portion to extend into said filtering medium, the other end of said second tubular member on said rigid portion extending exteriorly of said container, and

a generally bowl-shaped receptacle for holding smoking material, said receptacle being removably attached to said other end of said second tubular member and having a bore substantially at the bottom thereof providing open communication between the interior of said receptacle and the interior of said second tubular member, said bore being substantially circular when viewed in transverse cross section and having a smaller diameter portion opening interiorly of said receptacle and a larger diameter portion for receipt of said other end of said second tubular member.

4,134,410

LIQUID-FILTERED SMOKING DEVICE HAVING LIQUID-SURGE PREVENTING MEANS INCORPORATED THEREIN

Richard W. Kahler, Rt. 1, Box 61, Rock Cave, W. Va. 26234

Filed Jan. 14, 1977, Ser. No. 759,482

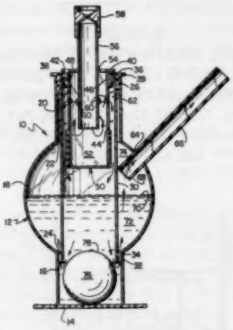
Int. Cl.[2] A24F *1/30*

U.S. Cl. 131—173 **14 Claims**

9. A sub-assembly for preventing the backward surge or splashing of a liquid within a liquid-filtered smoking device during non-inhalation periods and following an inhalation period, comprising:

means for introducing smoke into said device and said liquid contained therein; and

float valve means operatively associated with said smoke-introducing means wherein said float valve means has a specific gravity less than said liquid and responsive to the existence of vacuum or atmospheric pressure conditions within said device for permitting the flow of smoke from said smoke-introducing means into said device or for



preventing the backward surge or splashing of said liquid into said smoke-introducing means, respectively.

4,134,411

ACIDIC TWO-BATH TYPE COMPOSITION FOR PERMANENT WAVING OF HAIR AND FOR TREATMENT OF HAIR AND SCALP

Ikue Yamazaki, 32-10 Hakusan-1-chome, Bunkyo-ku, Tokyo, Japan

Filed Feb. 9, 1976, Ser. No. 656,207

Claims priority, application Japan, Sep. 5, 1975, 50-107911

Int. Cl.[2] A45D *7/02, 7/06*

U.S. Cl. 132—7 **5 Claims**

1. A process for treating human hair and scalp, which comprises applying to the hair and scalp an aqueous reducing agent solution containing 3 to 10% by weight of at least one mercaptan acid and having a pH adjusted with a base to a value 0.1 to 2.0 lower than the isoelectric point of the hair or scalp; allowing the thus treated hair and scalp to stand for a period of 10 to 30 minutes while substantially protecting the hair and scalp from air, applying to the thus treated hair and scalp an aqueous oxidizing agent solution (A) containing 0.5 to 3 percent by weight of sodium bromate, potassium bromate, or hydrogen peroxide and having a pH 0.1 to 1.5 lower than the pH of the reducing agent solution but not more than 3.0 lower than the isoelectric point of the hair or scalp for 10 to 15 minutes; and then applying to the hair and scalp an aqueous oxidizing agent solution (B) containing 1 to 5 percent by weight of sodium bromate, potassium bromate or hydrogen peroxide and having a pH 0.1 to 2.0 lower than the pH of the aqueous oxidizing agent solution (A) but not more than 3.0 lower than the isoelectric point of the hair or scalp for a period of 10 to 30 minutes, thereafter wash said hair and scalp with water and drying.

4,134,412

HAIR SETTING LOTION CONTAINING A CHITOSAN DERIVATIVE

Paul Gross; Eugen Konrad, both of Darmstadt, Fed. Rep. of Germany, and Herbert Mager, Fribourg, Switzerland, assignors to Wella Aktiengesellschaft, Darmstadt, Fed. Rep. of Germany

Filed Nov. 18, 1976, Ser. No. 743,290

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627419

Int. Cl.[2] A45D *7/00*; A61K *7/11*

U.S. Cl. 132—7 **6 Claims**

1. A process of setting the hair comprising applying to the hair a lotion wherein the active component is an aqueous or aqueous-alcoholic solution of a film-forming resin which resin contains 0.05 to 4% by weight of a water soluble salt of chitosan as the film-forming component, the said chitosan salt being obtained by reacting chitosan or a chitin product containing

about 70–90% by weight of chitosan with a sufficient amount of an acid to neutralize the free amino groups present on chitosan and to form a water-soluble salt thereof.

4,134,413

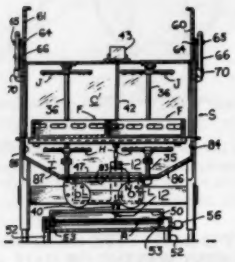
TANDEM RACK DISHWASHING MACHINE WITH TIME-CONTROLLED WASHING AND RINSING CYCLES

Tore H. Noren, 3200 Lakeville Hwy., Petaluma, Calif. 94952

Division of Ser. No. 733,387, Oct. 18, 1976, Pat. No. 4,088,145. This application Feb. 13, 1978, Ser. No. 877,295

Int. Cl.[2] B08B *3/02*

U.S. Cl. 134—47 **4 Claims**



1. A dishwashing machine comprising:

(a) a dishwashing and dish rinsing compartment;

(b) a tank underlying said compartment for receiving wash water and rinse water therefrom;

(c) a sump for receiving water from said tank;

(d) time controlled means for circulating hot wash water from said sump and tank for spraying it onto the dishes in said compartment for a predetermined time period;

(e) a drain pipe for said sump and a drain valve normally closing said drain pipe, said time controlled means including means for opening said drain valve at the end of the predetermined time period for washing the dishes;

(f) a waste water receiving reservoir with a capacity sufficient for receiving all of the wash water from said tank and sump, said drain pipe communicating with said reservoir and said reservoir having an outlet pipe to the sewer;

(g) said time controlled means including means for delivering a predetermined volume of fresh hot rinse water into said tank, said drain valve closing about the time the rinse water starts entering said tank; and

(h) said time controlled means circulating hot rinse water from said sump and tank for spraying it onto the dishes in said compartment for a predetermined time period while said outlet pipe is still draining the waste water from said reservoir into the sewer.

4,134,414

ADJUSTABLE UPPER SPRAY ARM FOR DISHWASHER

Wilbur W. Jarvis, St. Joseph, and Leslie Toth, Coloma, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Jun. 13, 1977, Ser. No. 805,977

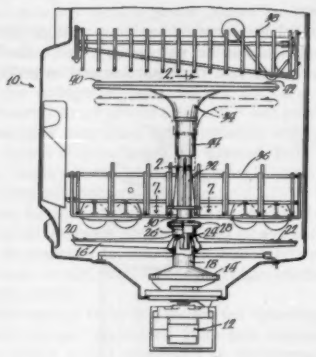
Int. Cl.[2] B08B *3/02*

U.S. Cl. 134—144 **3 Claims**

1. In a dishwashing appliance having a tub, an upper dish-supporting rack movably mounted in said tub, a lower dish-supporting rack mounted in said tub below said upper rack for movement between a loading and an operating position, pump means below said lower rack for providing washing liquid under pressure, a tower having an axis and including first and second ends and defining a fluid conduit therebetween with said first end of said conduit fixed to said rack, means for providing a fluid coupling between said first end of said tower and said pump means with said lower rack in said operating position, and an upper spray arm rotatably carried by said second end of said tower for distributing washing liquid toward said upper rack, the improvement comprising:

a collar engageable with said second end of said tower at at least two selected vertical positions on said tower for supporting said upper spray arm on said tower at said selected vertical positions;

a first surface on said tower and a second surface on said collar, said surfaces being parallel to said axis and cooperating to provide said upper spray arm at said selected vertical positions; and



means for retaining the spray arm at said selected positions including

a projection extending from one of said surfaces in a generally radial direction with respect to said axis, and

a groove defined on the other of said surfaces for receiving said projection, said groove including surface portions for retaining said projection in more than one location with said groove,

whereby said vertical position of said upper spray arm is adjusted by manipulating said collar on said tower to move said projection within said groove from one location to another.

4,134,415

PIPELINE TRANSPORTATION OF HEAVY CRUDE OIL

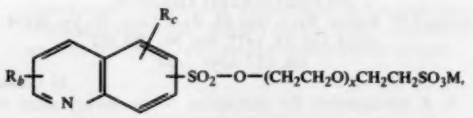
Kenoth H. Flournoy, Kingsville; Robert B. Alston, Missouri City, and William B. Braden, Jr., Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 664,740, Mar. 8, 1976, abandoned. This application May 31, 1977, Ser. No. 802,146

Int. Cl.[2] F17D *1/17*; B01F *17/42*

U.S. Cl. 137—13 **5 Claims**

1. In the transportation of viscous hydrocarbons by pipeline, the improvement which comprises forming an oil-in-water emulsion by introducing into the pipeline with said hydrocarbons an aqueous solution comprising about 0.01 to about 2.0 percent by weight of surfactant of the formula:

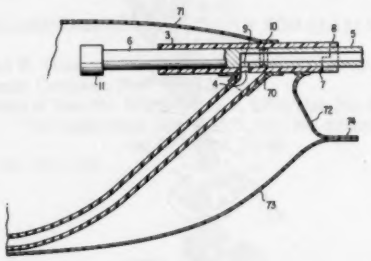


wherein R_b is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, R_c is selected from the group consisting of hydrogen and alkyl of from 1 to 5 carbon atoms, x is an integer of from 1 to 20 and M is a monovalent cation selected from the group consisting of sodium, potassium, lithium and ammonium, and about 0.01 to about 1.8 percent by weight of a soap selected from the group consisting of rosin soaps and naphthenic acid soaps and mixtures thereof.

4,134,416
SAFETY DEVICE FOR CLOSING A PIPELINE, ESPECIALLY FOR THE GASOLINE TANK OF AUTOMOTIVE VEHICLES

Serge Lallement, La Chapelle sur Erdre, and Philippe Martineau, Nantes, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Apr. 12, 1977, Ser. No. 786,868
Claims priority, application France, Apr. 13, 1976, 76 10778
Int. Cl.[2] F16K *3/26*
U.S. Cl. 137—38 **4 Claims**



1. A safety device for blocking a fuel line, in particular one leading from an automobile gas tank, comprising:

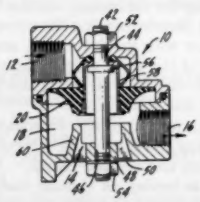
an outer elongate sleeve passing through the wall of the gas tank to which it is attached and having a lateral hole therein opening into said gas tank; and,

a tubular assembly slidable within said sleeve and consisting over part of its length of a solid part, terminated at the end inside the tank by a stop for limiting movement of said assembly in said sleeve in the direction leading out of said tank, and over another part of its length of a tubular part with an opening outside said gas tank on the one end thereof and an opening at a right angle into said lateral hole in said sleeve along the length thereof wherein the parts, solid and tubular, of said tubular assembly are separated by a solid section of smaller diameter forming a peripheral constriction for breaking during a violent collision whereby the lateral hole of said sleeve and the opening at a right angle into the lateral hole are not aligned and fuel cannot escape during said collision.

4,134,417
QUICK RELEASE VALVE

Charles Horowitz, Niles, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Dec. 20, 1976, Ser. No. 752,132
Int. Cl.[2] G05D *7/00*
U.S. Cl. 137—102 **4 Claims**



1. A quick release valve for vehicle air brake systems including a housing, a supply port, an exhaust port, and at least one brake port opening into said housing;

a valve member positioned within said housing to control communication between said ports, said valve member having a body with a peripheral flexible portion thereof being movable in response to pressure at said supply port to open communications between said supply and brake ports,

a diaphragm integral with said body, said diaphragm extending away from said body and terminating in a ring portion, said diaphragm being attached to said housing, the area of said body and diaphragm exterior of said ring portion being in communication with said supply port;

a support sleeve positioned within said diaphragm and said body;

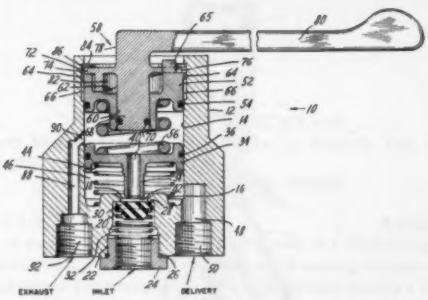
a rod extending entirely through said housing and coaxially aligned with said exhaust port, said sleeve and diaphragm ring portion being mounted to said housing through said rod;

a valve seat surrounding said exhaust port, one side of said valve member having a portion positioned for sealing contact with said valve seat to close communication between said brake and exhaust ports, the side of said valve member opposite said one side having an area in communication with said supply port which is only slightly larger than the area of said one side peripherally exterior of said portion, whereby said valve member is movable toward and away from said valve seat in response to small pressure differentials between said supply and brake ports.

4,134,418
MANUAL FLUID PRESSURE CONTROLLER

Glenn Woodcock, Spanish Lake, Mo., assignor to Wagner Electric Corporation, St. Louis, Mo.

Filed Jun. 8, 1977, Ser. No. 804,523
Int. Cl.[2] G05D *16/10*
U.S. Cl. 137—116.5 **5 Claims**



1. A manual fluid pressure controller comprising:

(a) a housing;

(b) means for connecting pressurized fluid to and from said housing;

(c) exhaust means in said housing;

(d) a valve in said housing between said means for connecting pressurized fluid to and from said housing;

(e) a cylindrical cavity in said housing;

(f) a metering piston having first and second sides coaxially disposed in said cylindrical cavity;

(g) a cam handle having handle and cam parts;

(h) said cam part being coaxially disposed in said cylindrical cavity and said handle part being outside said housing, said cam handle being capable of rotation between on and off positions;

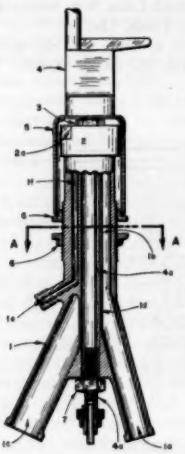
(i) a cam follower coaxially disposed in said cylindrical cavity cooperating with said cam for translation substantially without rotation of said follower upon the occurrence of rotation of said cam handle;

(j) resilient means biased between said cam follower and the first side of said metering piston;

(k) means for applying the fluid pressure in said means for connecting fluid pressure from said housing to the second side of said metering piston;

(l) a passage in said metering piston providing fluid communication between said second side and said exhaust means;
(m) means for sealing said passage when said cam handle is moved from its off position toward its on position;
(n) means on said metering piston for opening said valve whereby a metered amount of pressurized fluid is connected from said means for connecting to said housing to said means for connecting from said housing; and
(o) cooperating motion limiting abutment means on said cam handle and said cam follower to limit the rotary motion of said cam handle by abutment of said cooperating motion limiting abutment means between off and on positions.

4,134,419
TRI-COMBINATION SYSTEM
Thomas E. Richetti, 1150 Linda Dr., Arroyo Grande, Calif. 93420
Filed Dec. 8, 1976, Ser. No. 748,663
Int. Cl.[2] F16K *24/00*
U.S. Cl. 137—216 4 Claims



1. A combination faucet and antisyphon apparatus for discharging two effluents including dishwater and water purification effluent and dispensing drinking water comprising; a body including means to install said body in a single opening in a sink, said body being cylindrical in the central and upper portions and including two inlet passages and one outlet passage in a lower portion of said body, air gap means in said upper portion of said body for venting said effluent inlet passages prior to discharge into said outlet passage, a cap mounted on said upper portion of said body adjacent said in gap means, said inlet passages and outlet passage being in communication with said air gap means, said inlet passages communicating through said air gap means to said outlet passage, a bore extending through said body and said cap, an outer cylindrical cover over said cap and said upper portion of said body, said cover having a top with an opening that aligns with said bore, a valve for dispensing said drinking being disposed above said cover and connected to a tube extending through said bore, thereby defining two walls separating the drinking water conveyed within the tube and the effluents conveyed within the passages, said walls defining between them a space vented to the atmosphere.

4,134,420
FAUCET VALVE FOR SINKS, WASH BASINS AND OTHER APPLICATIONS
Hyman Okonowitz, Selden, N.Y., assignor to Jameco Industries, Inc., Wyandanch, N.Y.
Filed Jun. 13, 1977, Ser. No. 805,882
Int. Cl.[2] F16K *43/00*
U.S. Cl. 137—315 3 Claims

1. A faucet valve for sinks, wash basins and other applications wherein the valve is mounted between a sink or basin wall and a fixed cover plate, said wall and cover plate having registering openings to accommodate the valve, said valve comprising:
a. a hollow valve body extending through the opening in the sink or basin wall,
b. said valve body having both internal and external screw threads,
c. a nut engaging the external screw threads on the valve body and securing said valve body to the sink or basin wall,
d. a hollow bonnet extending through the registering opening in the cover plate,
e. said bonnet having both internal and external screw threads,
f. the external screw threads of the bonnet engaging the internal screw threads of the valve body to secure the bonnet to the valve body,
g. an externally threaded valve stem threaded to the internal screw threads of the bonnet and extending into the valve body,
h. a valve seat in the valve body and a valve closure member on the valve stem engageable with said valve seat,
i. an actuating handle on the valve stem for opening the valve by rotating the valve stem relative to the bonnet and valve body and thereby moving the valve closure member into engagement with the valve seat, and for closing the valve by rotating the valve stem in the opposite direction and thereby moving the valve closure member into engagement with the valve seat,
j. the bonnet being provided with an annular flange and the valve body being provided with a tubular section coaxially aligned with said annular flange,
k. said cover plate having an annular flange encircling the opening therein and extending coaxially between the annular flange of the bonnet and the tubular section of the valve body,
l. said annular flange of the bonnet being seated on the annular flange of the cover plate and clamping said annular flange of the cover plate to the tubular section of the valve body when the bonnet is secured to the valve body, and
m. a ratchet interlock between said annular flange of the bonnet and the annular flange of the cover plate oriented

to allow the bonnet to be threaded into the valve body and to oppose threading the bonnet out of the valve body,

n. said ratchet interlock comprising ratchet teeth formed on the underside of the annular flange of the bonnet and complementary ratchet-shaped sockets formed in the upper side of the annular flange of the cover plate,

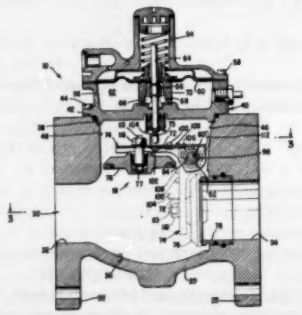
o. said ratchet-shaped sockets being recessed sufficiently to receive the ratchet teeth without disturbing the seating of the annular flange of the bonnet on the annular flange of the cover plate.

4,134,421

CLOSING SPRING ASSEMBLY FOR SLAM-SHUT VALVES

Albert R. Cameron, Huntingdon Beach, Calif., assignor to The Singer Company, New York, N.Y.

Division of Ser. No. 692,164, Jun. 2, 1976, Pat. No. 4,067,095.
This application Oct. 6, 1977, Ser. No. 839,964
Int. Cl.² F16K *23/00*
U.S. Cl. 137—316 **4 Claims**



1. In the assembly of a slam-shut valve having a housing with a reset assembly mounted therein and including a releasably-held lever pivotally mounted on a reset shaft and carrying a valve element for closing a flow passage in said valve upon release of the lever, the assembly comprising:

(a) a chamber bounded by walls and formed in the housing above the flow passage, and adapted to receive the reset shaft and lever therein,

(b) the lever having a body portion with a slot formed adjacent one end of the lever,

(c) a spring having one end connected to the lever, and the other end releasably held within the slot, and

(d) the releasable end of the spring to remain in the slot until after connection is made between the lever and reset shaft, and then being removed to engage one wall of the chamber to bias the lever toward the closed position.

4,134,422

IRRIGATION LINE MOVER

Paul E. Batson, Springfield, Oreg., assignor to Crown American Irrigation, Inc., Eugene, Oreg.

Filed Apr. 14, 1977, Ser. No. 787,590
Int. Cl.² A01M *7/00*; B05B *3/12*; G05G *3/00*; B05B *3/00*
U.S. Cl. 137—344 **8 Claims**

1. In an irrigation line move including a pipe,

pipe supporting wheels keyed to the pipe,

a cart-like carriage including a frame journaling the pipe and carriage wheel means supporting the frame,

a reversible prime mover on the frame serving to rotate the pipe to roll the wheels,

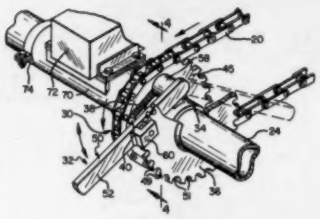
the improvement comprising:

a driving member mounted on and freely rotatable on the carriage wheel means,

drive train means connecting the driving member to the prime mover,

a ratchet member comprising a sprocket keyed to the carriage wheel means,

and reversible pawl means keyed to the driving member for driving the ratchet member,



the wheel means including an axle and carriage wheels mounted on and keyed to the axle,

the reversible pawl means including an arm pivotally mounted on the driving member at a point spaced radially from the pitchline of the sprocket, a pin on the arm and overcenter spring means urging the arm to urge the pin into engagement with the sprocket.

4,134,423

FLOWRATE CONTROL MEANS

Robert Mayer, Ardmore, Pa., assignor to Suntech, Inc., St. Davids, Pa.

Filed Sep. 1, 1977, Ser. No. 829,692
Int. Cl.² G05D *7/06*
U.S. Cl. 137—486 **8 Claims**

1. A system for maintaining the flowrate of a fluid through a conduit at a predetermined value, which system includes:

(A) means for generating a first pulse stream having a frequency representative of the predetermined flowrate;

(B) means for generating a second pulse stream having a frequency representative of the actual flowrate;

(C) a valve disposed in the fluid stream for regulating the flowrate by adjusting the valve position;

(D) motor means coupled to said valve for adjusting the valve position;

(E) an up/down counter having count-up and count-down inputs and a plurality of outputs, which outputs provide a digital representation of the count held within said counter;

(F) a digital-to-analog converter coupled to said counter to receive said counter outputs, said digital-to-analog converter being adapted to issue an analog signal representative of the count held within said counter;

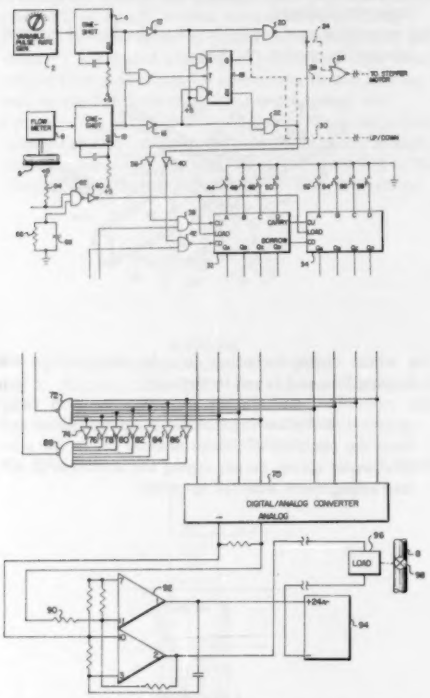
(G) motor drive means having an input coupled to receive said analog signal and an output coupled to drive said motor means;

(H) pulse difference means coupled to receive said first and second pulse streams and adapted to apply an increment pulse to said count-up input to said up/down counter if the frequency of one of said pulse streams exceeds the frequency of the other pulse stream; and

(I) safety means for inhibiting:

1. the application of increment pulses to said count-up

input of said up/down counter when the count therein reaches a first predetermined value, and



2. the application of decrement pulses to said count down input of said up/down counter when the count therein reaches a second predetermined value.

4,134,424

TWO-WAY RELIEF AND CONTROL VALVES

Abraham Zeyra, 1512 S. Bedford, Los Angeles, Calif. 90035, and Thomas Günzler, 16929 Escalon, Encino, Calif. 91436

Filed Jul. 12, 1977, Ser. No. 814,858

Int. Cl.[2] F16K *15/14, 17/18*

U.S. Cl. 137—493 **10 Claims**

1. A bi-directional fluid flow control valve, comprising:

an elongated, substantially cylindrical valve body with an internal channel open to one end thereof, and closed at the other end;

a circular sealing disk projecting from the other end of said valve body, with the periphery of said sealing disk formed to define a continuous peripheral strip at the largest diameter thereof;

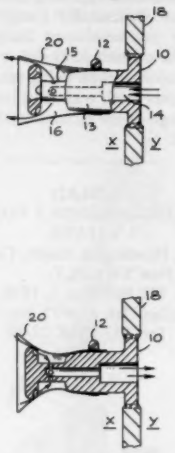
a support disk on said valve body, spaced from said sealing disk;

orifice means penetrating said valve body and communicating with said internal channel, at a position intermediate between said sealing disk and said support disk;

a substantially tubular, elastic membrane sheath drawn over said valve body, in sealing engagement with said largest diameter of said sealing disk and with said support disk;

means for affixing said membrane sheath to said support disk; and

substantially radial runnels in said sealing disk, sculpturing the face thereof proximate to said orifice means and extending radially to a position spaced from said largest diameter along said face.



4,134,425

DEVICE FOR DISTRIBUTING FLOWING MEDIA OVER A FLOW CROSS SECTION

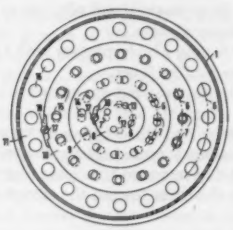
Horst Güssefeld, Uttenreuth, and Heinz Christoph, Nüremberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 11, 1977, Ser. No. 776,867

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1976, 2610556

Int. Cl.[2] F16K *3/32*

U.S. Cl. 137—625.3 **4 Claims**



1. A device for distributing flowing medium over a flow cross section comprising

a distributor plate which extends over the flow cross section and which has a multiplicity of openings distributed over its entire extent;

a cover plate which has passages distributed over its entire extent and which is movably arranged relative to said distributor plate so as to determine the total free passage cross section of all the openings of said distributor plate, said cover plate including;

a rotatable disk;

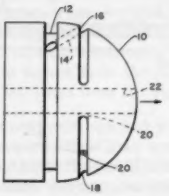
and a number of rings concentric with and surrounding said disk, each of said rings being rotatable relative to said disk and relative to one another.

4,134,426

SEAWATER HYDRAULIC MOTOR DISTRIBUTING VALVE BASED ON A HYDROSPHERE BEARING

Earl J. Beck, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation of Ser. No. 733,586, Oct. 18, 1976, abandoned.
This application Feb. 7, 1978, Ser. No. 875,825
Int. Cl.[2] F16K *25/02*
U.S. Cl. 137—625.23 **10 Claims**



1. A seawater hydraulic motor distributing valve comprising:

a. a housing having a portion defining a hemispherically shaped socket;

b. a spherically shaped ball disposed within said shemispherically shaped socket; said ball being constrained to rotate within said socket about a central axis;

c. said ball having a high pressure groove formed therein around its circumference connected by a first interior channel to a high pressure distributing groove, said ball also having a low pressure exhausting groove aligned with said high pressure distributing groove connected to a first exhaust port by a second interior channel; and

d. said socket having a high pressure inlet channel aligned with said high pressure groove, a second exhaust port aligned with said first exhaust port, and a series of distributing channels having ports in said socket which are equally distributed around said socket and aligned with said high pressure distributing groove and said low pressure exhausting groove;

e. said ball and said socket forming a stiff-action hydrosphere bearing which is capable of continuous, dyanmic operation with a low viscosity working fluid such as water with a minimum of leakage.

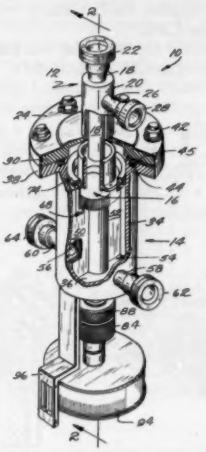
4,134,427

FLOW SPLITTER

Joseph Vitner, 27 Grand Ave., Waldwick, N.J. 07463

Filed Nov. 17, 1975, Ser. No. 632,659
Int. Cl.[2] F16K *11/00*
U.S. Cl. 137—876 **10 Claims**

1. A flow-splitting device for dividing a liquid flow into two output streams, said device comprising: inlet means for directing a liquid flow into said device; rotatable flow-forming means having a flat surface transverse to and facing said inlet means for forming said liquid flow into a flat sheet of a predetermined lateral extent; splitting means for linearly splitting said flat sheet into at least two portions; two collecting means respectively collecting the split portions; means for adjusting the relative position of said flow-forming means and said splitting means for proportioning the flow between the sheet portions; and an outlet for each of said collecting means so that



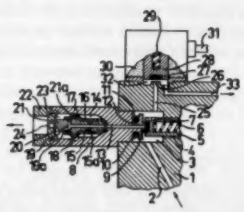
liquids flowing at varying rates can be consistently split into a plurality of separate portions.

4,134,428

NON-DRIP VALVE

Curt A. Björklund, Box 99, Stenasgatan 14, Ulricehamn, Sweden

Filed Aug. 18, 1977, Ser. No. 825,586
Claims priority, application Sweden, Aug. 31, 1976, 7609591
Int. Cl.[2] F16K *23/00*
U.S. Cl. 137—882 **10 Claims**



1. Valve apparatus for fluids comprising:

a housing having a supply chamber, a discharge chamber, and a vacuum chamber connected to said discharge chamber through a passage;

a conduit leading from said supply chamber to said discharge chamber;

pressure-actuated supply valve means at the supply end of said conduit operable in response to the fluid pressure in said supply chamber to open and close above and below a predetermined pressure level respectively;

an expandable member in said vacuum chamber responsive to the fluid pressure in said conduit to reduce the volume of said chamber when said conduit is under fluid pressure and to expand the volume of said chamber when said fluid pressure is relieved;

one-way discharge valve means at the discharge end of said conduit to permit fluid flow from said conduit into said discharge chamber when said conduit is under fluid pressure; and

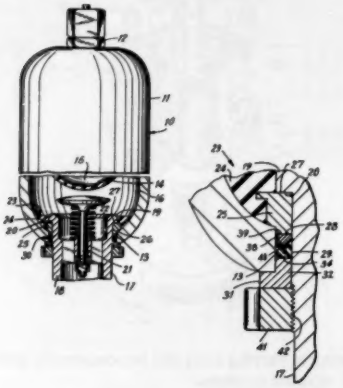
one-way bypass valve means bypassing said supply valve means to permit reverse flow of fluid from said conduit into said supply chamber when said pressure-actuated valve is closed, to thereby relieve pressure in said conduit, affording expansion of said vacuum chamber.

4,134,429

HYDRAULIC ACCUMULATOR HAVING AN IMPROVED OIL PORT SEAL

Abduz Zahid, Los Angeles, Calif., assignor to Greer Hydraulics, Inc., Los Angeles, Calif.

Filed Jun. 15, 1977, Ser. No. 806,835
Int. Cl.[2] F16L 55/04
U.S. Cl. 138—30 1 Claim



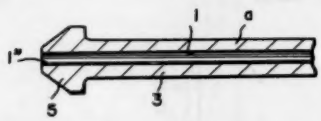
1. In a pressure accumulator device of the type which comprises a metallic pressure vessel having a gas charging port at one end and an oil port defined by a bore at the other end, said accumulator including an outlet plug having a cylindrical shank extending through and spaced from said bore and having a radially outwardly extending flange disposed within said vessel, portions of said shank externally of said vessel being threaded, an annular metallic locking member within said vessel and encompassing said shank, said locking member having internal diameter portions closely embracing the exterior of said shank and external retainer portions engaging the upwardly facing walls of said vessel surrounding said bore, and an end portion disposed in the space between said bore and said shank, said flange of said plug extending radially in overlapping relation of said locking member, the improvement which comprises an annular metallic spacer collar mounted on said shank of said plug, said collar including an annular flange extending radially from a lower portion of said collar and engaging external surfaces of said vessel surrounding said port, a sleeve portion extending upwardly from said flange and disposed in said space between said bore and said shank, an annular, resilient elastomeric seal member (mounted on) fixed to said sleeve and extending upwardly therefrom into said space, said seal member including outer and inner annular, radially spaced-apart concentric lip portions, said lip portions extending upwardly into said space and being disposed adjacent the inner diameter of said bore and the outer diameter of said shank, respectively, an annular metallic spreader washer interposed between said end portion of said locking member and said seal member, said washer including an annular wedge surface disposed between said lips, clamp nut means threadedly mounted on said shank urging said locking member and said flange of said spacer collar into sealing engagement with portions of said vessel adjacent the interior and exterior of said bore, respectively, and urging said spreader washer toward said seal member to deflect said outer and inner lip portions, respectively, radially outwardly and inwardly to define an annular seal area between said bore and said shank, the distance between said retainer portions of said locking member and said annular flange of said collar being a fixed distance as a result of the metal-to-metal contact between said retainer portions, walls of said vessel, and said flange of said collar, whereby the distance of penetration of said spreader washer between the lips of said seal member is fixed, thereby accurately to control the lateral sealing forces exerted by said lip portions.

4,134,430

HIGH PRESSURE FUEL INJECTION PIPE

Masayoshi Mukasa, Shizuoka, and Shigeaki Fujimaki, Numazu, both of Japan, assignors to Usui International Industry, Ltd., Shizuoka, Japan

Filed Nov. 10, 1976, Ser. No. 740,750
Int. Cl.[2] F16L 9/00
U.S. Cl. 138—109 2 Claims



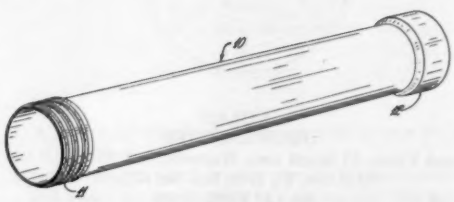
1. A high pressure fuel injection pipe having a flanged head and an axial fuel flow path with a substantially constant inner diameter along at least a portion of the length of said pipe, said fuel flow path being substantially smooth-surfaced and substantially free of hair line cracks, said pipe being formed by extraneously squeezing an end portion of a thick-walled, small-diametered steel pipe member having a flow path extending through the axis thereof to form a flow path of reduced diameter within said end portion, inserting the portion of said thick-walled, small-diametered steel pipe member which has the unreduced diameter into a supporting bore in a chuck so that said end portion of reduced diameter is projectedly held outwardly of said chuck, butt-pressing said projected end portion from outside thereof by means of a shaping tool such as punch metal or the like to plastically shape a frustoconical or arcuate-surfaced connecting head, and grinding minute curved concavo-convex faces created in the inner surface of said flow path of reduced diameter during the plastic shaping of said connecting head, to thereby form a smooth-surfaced flow path equal in diameter to and communicating with said axial flow path in said small-diametered steel pipe member, the grinding of said surface creating a flow path substantially free of hair line cracks.

4,134,431

METHOD OF AND APPARATUS FOR MOLDING SPIGOT RINGS ON PIPE SECTIONS AND PRODUCT OF THE METHOD

Franklin E. Davidson, and Lee E. Pearson, both of Conroe, Tex., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 11, 1977, Ser. No. 795,835
Int. Cl.[2] B29C 1/00, 5/00; B29D 23/02, 23/08
U.S. Cl. 138—109 6 Claims



1. A method of molding a resin spigot ring on an end portion of a section of glass fiber reinforced thermosetting resin pipe to provide a pair of spaced connected exterior raised ring portions defining an annular groove for later reception of an elastomeric annular gasket, the method comprising supporting the pipe section horizontally with the end portion free, applying a pair of elastomeric mold sealing rings to the pipe end portion in spaced relationship to each other and to the respective end face of the pipe, applying upper and lower mold halves to the pipe end portion in predetermined relationship to

the respective end face of the pipe section to form a composite mold having a first pair of spaced internal annular grooves respectively adjacent opposite end faces thereof, a second pair of spaced internal annular grooves between the first pair, and an annular portion between the grooves of the second pair having an internal diameter smaller than the diameter of either of the grooves of the second pair but larger than the outside diameter of the pipe while locating the mold sealing rings respectively in the first pair of internal annular grooves of the mold, clamping the mold halves together, injecting hardenable liquid resin through an injection port in the lower mold half until resin overflows through vents in the upper mold half to fill the second pair of internal annular grooves of the mold and the space therebetween adjacent the pipe with the resin, letting the resin in the mold harden, unclamping and removing the upper and lower mold halves from the pipe section, and removing the mold sealing rings from the pipe section.

4,134,432
JACQUARD MACHINE

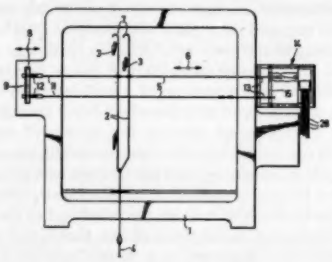
Rudolf Stauner, Constance, Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 19, 1977, Ser. No. 826,235

Claims priority, application Switzerland, Sep. 2, 1976, 11126/76

Int. Cl.² D03C *3/16, 3/20*

U.S. Cl. 139—59 **16 Claims**



1. A Jacquard machine comprising

a plurality of pressers for programming a plurality of lifting wires controlling warp yarns of a weaving machine;

a presser drive including a spring on each respective presser for moving said pressers in a given direction against said springs; and

a selection system for selectively inhibiting the movement of said pressers in said direction in accordance with a weave program, said selection system including a plurality of control elements movable between at least two positions and a plurality of locking levers, each said lever being disposed for movement into and out of the path of a respective presser in response to movement of said respective control element.

4,134,433
APPARATUS FOR PRODUCING KNIT-WOVEN FABRIC SELVAGE STRUCTURE

Oldrich Horacek, Liberec; Frantisek Silar, Vratislavice n/Nisou, and Dalibor Rychlik, Liberec, all of Czechoslovakia, assignors to Statni vyzkumny ustav textilni, Liberec, Czechoslovakia

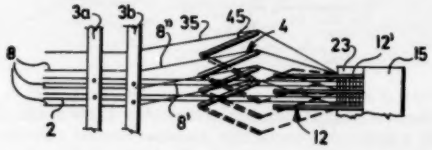
Division of Ser. No. 829,887, Sep. 1, 1977, Pat. No. 4,106,531. This application Jan. 6, 1978, Ser. No. 867,509

Claims priority, application Czechoslovakia, Sep. 9, 1976, PV5785-76

Int. Cl.² D03D *23/00, 25/00*

U.S. Cl. 139—383 B **3 Claims**

1. An arrangement for making a selvage structure of a knit-woven fabric in an apparatus for producing a knit-woven fabric, said fabric being produced in a warp-knit structure from weft thread loops and comprising spaced apart stitch wales with warp thread groups disposed therebetween, said warp threads being interlaced with stitch connecting loops to form a weave while the fabric selvage consists of a weft thread and a marginal weft thread, the selvage structure including a marginal wale built by mutually binding stitches from a weft thread, stitches from a marginal weft thread and stitches from a lock thread, said arrangement including a knitting mechanism for building a warp-knit structure from loops of weft thread unwound from a stationary supply, means for beating up stitch connecting loops into the fabric fell, said knitting mechanism comprising, on the one hand, a system of lapping guides the lapping arms of which are reciprocatorily swingable



in open shed from an intermediate start position to one of extreme lapping positions and back again, the lapping guides protruding permanently between warp threads of at least one of the two shed planes, and, on the other hand, a system of knitting needles with closable hooks, of which number corresponds to that of lapping guides, the knitting needle system being arranged across the fabric and mounted for reciprocation from a foremost start position in front of the beat-up plane of the fabric to an operating position in open shed and back again, in order to engage the weft threads being laid, the improvement which comprises an auxiliary lapping guide arranged at either side of the system of lapping guides for laying the lock thread unwound from a supply package into the marginal knitting needle, the operation of said auxiliary lapping guide being the same as that of the lapping guides.

4,134,434
WEFT CUTTING DEVICE IN LOOMS WITH MECHANISMS FOR MULTI WEFT WEAVING

Jaromir Malásek, Brno; Vladimir Kuda, Blazovice, and Vojmir Pozar, Budisov, all of Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Continuation-in-part of Ser. No. 776,746, Mar. 11, 1977, abandoned. This application Dec. 19, 1977, Ser. No. 861,880

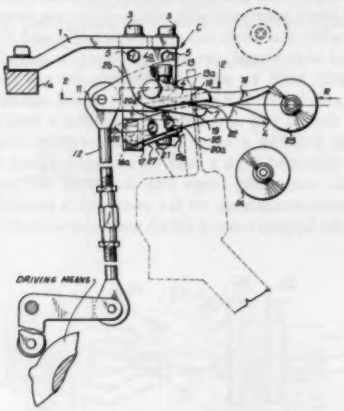
Claims priority, application Czechoslovakia, Nov. 11, 1976, 1581-76

Int. Cl.² D03D *47/34*

U.S. Cl. 139—429 **9 Claims**

1. In a device for cutting wefts in a loom which weaves a fabric in a weaving plane, the loom having a driving means, a frame, and means for inserting wefts, said cutting device having a body which is fixedly positioned on the frame of the loom, said cutting device including a cutting mechanism having relatively movable opposed elongated blades of which at least one is driven by the driving means, said blades extending transverse to the weaving plane of the loom, the improvement which comprises mechanism driven by the driving means, means for adjustably connecting at least one of the cutting blades of the cutting mechanism to the driven mechanism, whereby selectively to adjust the position of the cutting point relative to the length of the opposed cutting blades, cutting shields mounted on the body of the device and extending in a plane parallel to the plane of the cutting blades to receive and guide the weft so as to position it between the cutting edges of the cutting blades, each of the shields having a dent therein,

said dents confronting each other and entrapping the weft at the cutting point, and means for adjusting the shields so as to



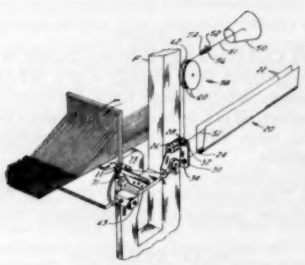
position the confronting dents thereof in alignment with the cutting point of the cutting blades.

4,134,435

WEFT STORAGE MEANS FOR FLUID JET LOOM

Joseph R. Cornellier, P.O. Box 681, Knowlton, Quebec, Canada

Filed Apr. 11, 1977, Ser. No. 786,597
Claims priority, application Canada, Mar. 15, 1977, 273991
Int. Cl.[2] D03D *47/34*
U.S. Cl. 139—452 **6 Claims**



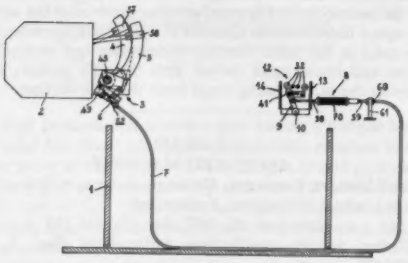
1. A weft filament storage device for a fluid jet loom comprising an elongated storage chamber having a pair of closed side walls interconnected by means of a closed bottom wall forming therebetween an elongated weft filament storage cavity having a substantially U-shaped configuration with said bottom wall merging arcuately with said side walls, said side walls extending from said bottom wall in a substantially parallel or slightly diverging manner, said chamber having a pair of open ends and an open top providing access to said cavity, one of said pair of open ends being adapted to receive a loop of weft filament projected therein by means of a pneumatic jet, said one open end having associated therewith an eyelet through which a weft filament is adapted to be fed from a source thereof, said storage device having a maximum width between said closed side walls of between 4 to 10 times the diameter of said eyelet and being of a length sufficient to completely contain a length of weft filament within said cavity.

4,134,436

MECHANICAL WEFT-THREAD SELECTOR FOR A SHUTTLELESS LOOM

Pierre Rémond, Bourgoin-Jallieu (Isere), France, assignor to Saurer Diederichs, Societe Anonyme, Bourgoin-Jallieu (Isere), France

Filed Nov. 7, 1977, Ser. No. 849,246
Claims priority, application France, Nov. 5, 1976, 76 34053
Int. Cl.[2] D03D *47/38*
U.S. Cl. 139—453 **11 Claims**



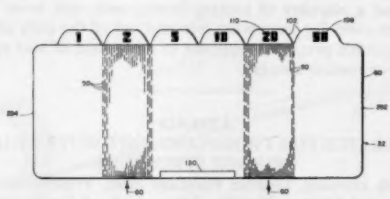
1. In a weft-thread selecting device for a shuttleless loom, in which each of a plurality of weft threads is engaged in a respective eye of a thread guide mounted to oscillate about a pivot and coupled to a drawbar which can be selected by being raised and engaged on a plate which is provided with means for imparting to the plate an alternating rectilinear movement such that the corresponding thread guide brings the weft thread selected into a passage of a weft-insertion member of the loom, a plurality of such drawbars being arranged side-by-side, the improvement wherein the raising of the selected drawbar is controlled by a first lever pivotally mounted about a pivot, able to cooperate with all the drawbars and connected to one end of a cable passing through a sheath whose mouthpiece adjacent this end is fixed, the other end of the cable and the corresponding mouthpiece of the sheath being movable and operatively connected to a device associated with two dobby levers for controlling the movement of said other end of the cable and the corresponding sheath mouthpiece.

4,134,437

BILLFOLD BILL FILE

Donald J. Finn, 5100 Sea Rancho Club #712 N. Ocean Blvd., Ft. Lauderdale, Fla. 33308

Filed Nov. 30, 1976, Ser. No. 746,196
Int. Cl.[2] A45C *1/00*
U.S. Cl. 150—38 **9 Claims**



1. A billfold file comprising a panel assembly for receiving currency bills, said panel assembly being for carrying inside a billfold for quick, easy and accurate storage and removal of bills, said panel assembly comprising: a plurality of vertical panels of flexible material, said panels being disposed in substantial parallelism, each two adjacent one of said panels having a vertical bill-receiving area therebetween, said bill-receiving areas each being open at their upper sides, said panels each being of a length more than double the height thereof for

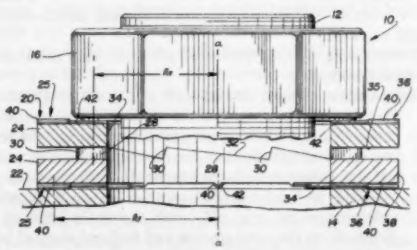
providing said bill-receiving areas with ability to receive unfolded currency bills therein, panel attaching means attaching said panels together at only attachment portions of each of said panels disposed exteriorly of said bill-receiving areas, said attachment portions being on one of the long sides of each of said panels and sufficiently close to the center of said panels as not to be in bend areas when said panel assembly is bent transversely of its length at two spaced bend areas so that said bend areas divide said panel into three portions each approximately one-third of the length of said panel assembly and when said bending has reached a point such that said right and left panels are approximately parallel with said central panel then said panel attachment portions will not be in said two bend areas even at times when said bill-receiving areas each have two currency bills therein, each of said panels having an index tab extending upwardly therefrom, each tab having a different currency number indicia means thereon.

4,134,438

LOCKING DEVICE FOR THREADED FASTENERS

Bengt O. Frieberg, 869 Picacho, La Habra Heights, Calif. 90631, and Arthur B. Herpolsheimer, 3615 Longridge Ave., Sherman Oaks, Calif. 91403

Filed Jul. 21, 1977, Ser. No. 817,791
Int. Cl.² F16B *39/28*
U.S. Cl. 151—35 **10 Claims**



1. A locking device for fastener means of the type having a nut-and-bolt arrangement, wherein said device comprises:

at least one annular washer body having a first and second flat plane and a central opening therein, the width of said washer body being defined by an outer peripheral edge and an inner peripheral edge;

cam means formed on said first flat plane and disposed about the inner peripheral edge thereof having a width less than the width of said washer body, wherein said cam means comprises a plurality of cam members contiguously arranged in a circular group, each cam member having an inclined cam surface and a front cam face;

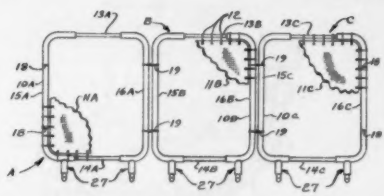
frictional means formed on said second flat plane, wherein said frictional means comprises a first outer tooth member, the radial length thereof being equal to or less than half the width of said washer body, and a second inner tooth member, the radial length thereof being equal to or less than half the width of said washer body, and wherein the depth of said first outer tooth member is greater than that of said second inner tooth member, whereby the axial force applied by said fastener means is transmitted from said inner disposed cam members of the first plane to the outer disposed tooth members of the second plane, thus establishing an outwardly extended moment arm.

4,134,439

PORTABLE INDUSTRIAL SCREEN

Richard D. Scott, Chicago, Ill., assignor to Commercial Vehicle Parts, Inc., Elk Grove Village, Ill.

Filed Jun. 22, 1977, Ser. No. 809,074
Int. Cl.² A47G *5/00*
U.S. Cl. 160—135 **3 Claims**



1. A folding portable screen for use about an area in a shop or the like in which welding is taking place in order to confine the optically harmful radiation, said screen comprising a plurality of generally rectangular, tubular metal frames each including a pair of vertical portions and a pair of horizontal portions with corners between the horizontal and vertical portions, fabric screens mounted in each of said frames respectively and connected to each of said portions, hinge means connecting the adjacent vertical portions of each adjacent pair of frames, and two support devices attached to each lower horizontal portions for supporting the screen on a floor or the like, characterized by:

each frame consisting of four elements, a first two of the elements forming one of said pair of portions, the corners and parts of the second pair of portions, the remaining two of the elements forming the remainder of the second pair of portions, the elements of said first two elements being telescopically fitted to said remaining two elements and being held against telescopic separation by said fabric being connected to each of said portions, each said adjacent vertical portion having two spaced, circumferential grooves therein in juxtaposition to corresponding grooves in the adjacent vertical portion of the adjacent frame;

said hinge means consisting of a rubber band seated in the grooves of said adjacent vertical portions, and encircling and interconnecting said adjacent vertical portions of said adjacent screens, each rubber band when in place interconnecting said vertical portions having a length somewhat greater than its relaxed length prior to being so positioned so that it is in tension, whereby the frames are normally held securely together but can be pivoted with respect to each other, and the number of frames constituting a screen may be diminished by severing the rubber bands connecting an adjacent pair of frames; and each device comprising:

a tubular socket attached to and extending vertically downward from said lower portion and defining an internal socket opening, open at the bottom, square in cross-section, and tapered with the smaller part thereof at the top and the larger part thereof at the bottom; and

an inverted tee-shaped foot member consisting of an upright part and a lower bar part normal to the upright part, said upright part having the exterior thereof square and tapered complementary to and seated in said socket opening;

whereby said taper permits said upright part to be wedged into said socket to normally hold it in place without the necessity for other fasteners and yet the upright part may be removed from the socket to permit the foot to be rotated ninety degrees and the upright part reinserted into the socket in that rotated position.

4,134,440

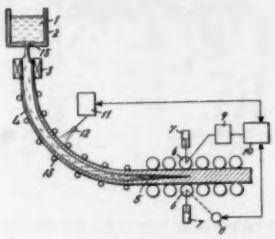
METHOD OF CONTINUOUSLY CASTING STEEL

Takaho Kawawa, Tokyo; Hideki Sato, and Shinobu Miyahara, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 506,633, Sep. 16, 1974, abandoned. This application Dec. 16, 1976, Ser. No. 751,618

Int. Cl.² B22D *11/16*

U.S. Cl. 164—4 **4 Claims**



1. The method of continuously casting molten steel which includes the steps of:

(a) continuously passing molten steel through a mold and allowing said steel to cool and form a cast piece having a length of molten interior extending from said mold to a crater downstream of the mold

(b) pre-determining a constant transverse pressure which, when applied to the completely solidified cast piece downstream of the crater, will result in a reduction of the thickness of the cast piece by a reference amount which is not less than 0.1% and not greater than 2%

(c) applying that predetermined constant transverse pressure to the cast piece by opposed pairs of pinch rollers

(d) measuring the reduction of thickness at the opposed pairs obtained as a result of step (c)

(e) determining which opposed roller pair represents the beginning of a completely solidified casting by comparing the measured reduction in thickness to the reference amount thereby locating the end of the crater; and

(f) modifying the cooling of the cast piece according to any difference where the measured reduction in thickness is approximately the same or considerably larger than the reference amount of reduction in thickness of the roller pair representing the beginning of a completely solidified casting to maintain the position of the end of the crater at a specified distance downstream of the mold.

4,134,441

METHOD OF ENLARGING THE STRAND WIDTH OF A STEEL STRAND DURING CONTINUOUS CASTING

Hisashi Ohmori; Masayuki Ohnishi, and Joshiji Yamamoto, all of Kurashiki, Japan, assignors to Kawasaki Seitetsu K.K., Kobe, Japan

Filed Sep. 20, 1977, Ser. No. 834,987

Claims priority, application Japan, Sep. 27, 1976, 51-115535

Int. Cl.² B22D *11/06*

U.S. Cl. 164—4 **7 Claims**

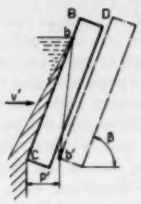
1. A method of widening the width of a continuously cast strand, especially a steel strand, comprising the steps of:

providing an adjustable continuous casting mold having a first pair of opposed small sides and a second pair of opposed long sides defining therebetween the mold compartment for the continuous casting of the strand;

during a first stage, and while the casting operation is in progress, displacing at least one small side of the mold away from a starting position into an inclined displaced position by pivoting said one small side about its lower end region away from the strand;

thereafter, during a second stage, substantially horizontally displacing said one small side away from and essentially parallel to the strand;

then, during a third stage, bringing said one small side out of the horizontally displaced disposition into a terminal position, by pivoting said one small side about its upper end region; and



selecting the displacement speed of the one small side which is effective during the second stage to be dependent upon the momentary casting speed in such a manner that there is ensured for contact of the cast metal at the entire, imbued surface of such side.

4,134,442

FURAN-PHENOLIC RESINS FOR COLLAPSIBLE FOUNDRY MOLDS

Robert Laitar, Chicago, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Division of Ser. No. 623,132, Oct. 16, 1975, Pat. No. 4,051,301. This application Jul. 12, 1977, Ser. No. 816,103

Int. Cl.² B22C *1/22*

U.S. Cl. 164—43 **5 Claims**

1. A process for forming foundry cores and molds comprising the steps of:

(1) contacting a hot pattern with a free flowing resin coated sand comprising

(a) particles of sand coated with about 1% to about 8%, based upon the weight of the sand, of a furan-modified phenolic novolak resin prepared by reacting 0.04 to 0.9 mole of furfuryl alcohol per mole of phenol at an acid pH to produce a furfurylphenolic intermediate and reacting said intermediate with a C_1 to C_3 aliphatic aldehyde at an acid pH, with the mole ratio of the aldehyde to the total phenol and furfuryl alcohol being within the range of 0.5 to 0.85, and separating the resin; and

(b) a curing agent;

(2) maintaining the resin coated sand against the hot pattern to bond a portion of the particles of resin coated sand together to form a foundry mold or core;

(3) removing unbonded particles of resin coated sand from the bonded particles of sand forming the foundry mold or core;

(4) curing the foundry mold or core at an elevated temperature to form a dimensionally stable mold or core; and

(5) removing the foundry mold or core from the pattern.

4,134,443

METHOD OF AND APPARATUS FOR PRODUCING STEEL INGOTS

Peter Machner, Leoben, Austria, assignor to Vereinigte Edelstahlwerke Aktiengesellschaft, Vienna, Austria

Filed Nov. 30, 1977, Ser. No. 855,836

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654834

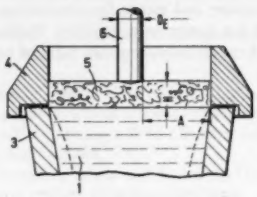
Int. Cl.² B22D *27/02*

U.S. Cl. 164—52 **10 Claims**

1. In a method of producing ingots of unalloyed and alloyed steels having an improved primary crystallization, reduced ingot segregation and a reduced content of non-metallic inclu-

sions, in which molten steel is poured into a mould having a mould cross sectional area and a mould inner wall, a slag mixture is supplied onto said molten steel to form a slag bath having a certain slag bath height, and at least one consumable electrode having an electrode cross sectional area is provided to supply said slag bath with energy while the steel solidifies, the improvement comprising using a slag bath height H_S given in cm and maximally corresponding to 0.15 (A + 100), A being the shortest distance between said mould inner wall and said at least one electrode, given in cm and amounting to at least 5 cm; and selecting said at least one electrode to have such dimensions as to give a ratio of said electrode cross-sectional area to said mould cross-sectional area of 1 : 10 at the most.

4. In an arrangement for producing ingots of unalloyed and alloyed steels having an improved primary crystallization, reduced ingot segregation and a reduced content of non-metallic inclusions, of the type including a mould having an inner



mould wall and a mould cross sectional area and accommodating molten steel, a top part to be placed on said mould and capable of accommodating a slag mixture, said slag mixture forming a slag bath having a certain height, and at least one liftable and lowerable consumable electrode having an electrode cross sectional area, said electrode being connectable to a source of electric power and mounted on an electrode holder for supplying energy to the slag bath while the steel solidifies, the improvement which is characterized in that said at least one consumable electrode is tubular and has an annular cross-sectional face immersed in the slag bath; the slag bath has a height H_S given in cm and maximally corresponding to 0.15 (A + 100), A being the shortest distance between the inner wall of the mould and said at least one consumable electrode, given in cm; and amounting to at least 5 cm, and said at least one consumable electrode has such dimensions that there results a ratio of electrode cross-sectional area to mould cross-sectional area of maximally 1 : 10.

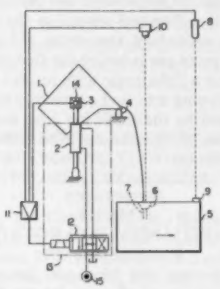
4,134,444

AUTOMATIC MOLTEN METAL POURING APPARATUS

Masakatsu Fujie, Ushikumachi; Kazuo Honma, Amimachi, and Atsushi Matsuzaki, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 7, 1976, Ser. No. 703,237
Claims priority, application Japan, Oct. 29, 1975, 50-129228
Int. Cl.² B22D *11/16*
U.S. Cl. 164—155 **20 Claims**

1. Automatic molten metal pouring apparatus comprising:
a. molten metal level detector means for detecting the level of molten metal remaining in a pouring cup;
b. mold position detector means for detecting that a mold has reached a predetermined position;
c. ladle tilting angle detector means for detecting the tilting angle of a ladle;
d. a ladle tilting servomechanism for causing said ladle to tilt; and
e. a control device receiving a supply of signals from said molten metal level detector means, said mold position detector means, and said ladle tilting angle detector means



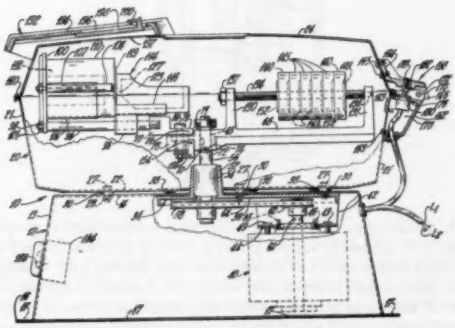
so as to actuate and control said ladle tilting servomechanism.

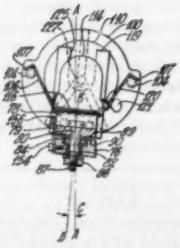
4,134,445

CENTRIFUGAL CASTING APPARATUS

William F. Goodrich, Galesburg, Ill.; Robert C. Ingersoll, Adrian, Mich., and Donald W. Doman, Janesville, Wis., assignors to Dick Blick Company, Galesburg, Ill.

Filed Aug. 5, 1977, Ser. No. 822,200
Int. Cl.² B22D *13/00*
U.S. Cl. 164—287 **4 Claims**





1. Centrifugal casting apparatus including, in combination, a hollow housing having a planar portion and a peripheral wall portion, a hollow base member supporting the housing, a vertically disposed shaft journally mounted for rotation in the housing, an electrically energizable motive means disposed in the hollow base member beneath the planar portion of the housing, means connecting the motive means with the shaft for rotating the shaft, a throwing arm in said housing mounted on and rotatable with the shaft, a secondary arm, a pivot pin pivotally mounting the secondary arm on the throwing arm,

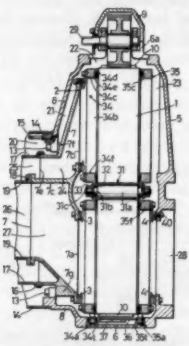
casting components including a molding flask and a crucible mounted on said secondary arm, the axis of the pivot pin being angularly disposed with respect to the vertical axis of the rotatable shaft, adjacent surfaces on said throwing arm and said secondary arm being disposed normal to the axis of the pivot pin whereby the secondary arm under the influence of the angularity of the pivot pin is biased for free rotation to a position substantially at a right angle with respect to the longitudinal axis of the throwing arm, and a rotatably adjustable balancing means mounted by the throwing arm, said arms and said casting components being embraced within the peripheral wall portion of the housing.

4,134,446

SEALING MECHANISM FOR ROTATIVE HEAT REGENERATOR

Hiroshi Okano, Susono, and Masayuki Iwatsuki, Takahama, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Co., Ltd., Showa, both of, Japan

Filed Aug. 15, 1977, Ser. No. 824,602
Claims priority, application Japan, Mar. 10, 1977, 52-26702
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—9 **10 Claims**



1. A sealing mechanism for a discoidal rotative heat regenerator core rotatively supported by a driving gear and having a toothed ring adapted to engage with said driving gear around the outer surface thereof, said sealing mechanism comprising a pair of seal rings between which said regenerator core is interposed, each of said seal rings including a central boss engaged with a spacer shaft mounted in a central through hole of said regenerator core and a ring portion facing the outer periphery of said regenerator core and connected to said boss by at least two cross bar portions, said boss, ring portion and cross bar portions having sliding members facing either side of said regenerator core, at least one of said sliding members on said ring portion being slidable on either side of said regenerator core, an elastic body being interposed between said at least one sliding member and said regenerator core.

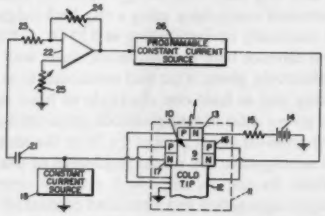
4,134,447

THERMAL COMPENSATOR FOR CLOSED-CYCLE HELIUM REFRIGERATOR

Robert A. Frosch, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Donald E. Jennings, Greenbelt, and John J. Hillman, Lanham, both of Md.

Filed Sep. 30, 1977, Ser. No. 838,337
Int. Cl.[2] H01B *7/34*
U.S. Cl. 165—30 **16 Claims**

1. In combination: a closed cycle helium refrigerator for maintaining a load at cryogenic temperatures, said refrigerator having a cold tip for receiving the load, said refrigerator having a tendency to cause the temperature of the cold tip and load to oscillate; a heater in a high conductivity thermal path with the cold tip; a temperature sensor in a high conductivity thermal path with the cold tip, the heater and the load so that the sensor is at substantially the same temperature as the heater



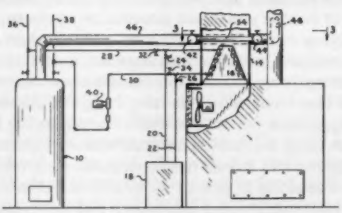
and substantially no thermal phase lag exists between the heater and the sensor; and means for connecting the temperature sensor and the heater in a negative feedback circuit to compensate for temperature variations induced by the refrigerator in the load.

4,134,448

HEATING AND AIR CONDITIONING SYSTEM

Edmund Luksus, 2491 Ranburn, Gary, Ind. 46408

Filed Apr. 27, 1977, Ser. No. 791,238
Int. Cl.[2] F25B *29/00*; F24D *9/00*
U.S. Cl. 165—62 **8 Claims**



1. A heating system for a building comprising the combination of:

a water heater having conduit means for delivering water to said water heater, and conduit means for delivering heated water from said water heater;

a hot air furnace having a plenum and air duct means communicating with said plenum;

an air conditioning apparatus having an evaporator coil device in said plenum of said furnace, and compressor and condensor units removed from said coil, said compressor and condensor units being connected to said coil by delivery and return conduit means for circulating refrigerant fluid;

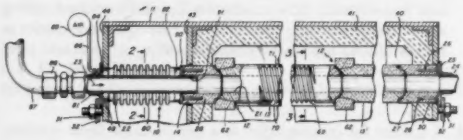
connecting conduit means communicating said conduit means for delivering water to said water heater and said evaporator coil device in said plenum, and a second connecting conduit means communicating said conduit means for delivering heated water from said water heater and said evaporator coil device; and

valve means in said first and second connecting conduit means operable to exclude water from said coil, and valve means in said delivery and return conduit means for circulating refrigerant fluid operable to exclude refrigerant fluid from said coil.

4,134,449
BELLOWS SEALING ARRANGEMENT

Paul G. La Haye, and John W. Bjerklie, both of Cape Elizabeth, Me., assignors to Hague International, South Portland, Me.

Filed Dec. 2, 1976, Ser. No. 746,703
Int. Cl.[2] F28F 7/00
U.S. Cl. 165—83 14 Claims



1. In a heat exchanger having an axially extending ceramic tube the improvement comprising a bellows arrangement for forming a gas leakage resistant pressure seal at an end of said elongated ceramic heat exchange tube,

said arrangement comprising an elongated metallic bellows defining a central passageway having first and second ends,

a fluid carrying system tube passing through said bellows and freely movable with respect to said second end of said bellows while defining a fluid chamber between said system tube and bellows,

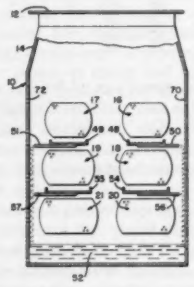
means for fixing in position said first end of said bellows with respect to a portion of said system tube,

and means for operatively connecting said second end of said bellows to apply pressure to said end of said heat exchange tube which pressure acts to form said seal.

4,134,450
SURFACE CONDENSER WITH VERTICALLY SEPARATED TUBE BUNDLES

Robert C. Boyer; John A. Martin, both of Easton; LeRoy J. Raseley, Saylorsburg, all of Pa., and Robert J. Stoker, Phillipsburg, N.J., assignors to Ecolaire Incorporated, Malvern, Pa.

Filed Mar. 30, 1976, Ser. No. 671,838
Int. Cl.[2] F28F 9/04
U.S. Cl. 165—111 5 Claims

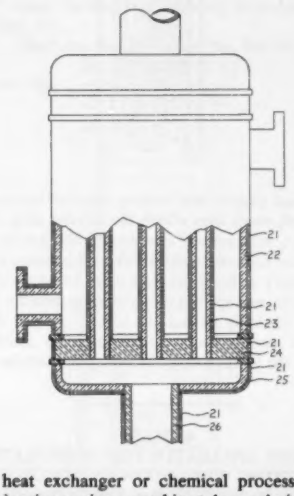


1. A system for condensing a gas comprising a housing having a gas inlet into the top wall of the housing, at least one vertical column of vertically spaced separate tube bundles, said tube bundles being separated from the longitudinal walls of the housing defining gaps between the longitudinal walls and the sides of the tube bundles so that gas entering through said inlet will flow through the gaps as well as into the space between the tube bundles, a separate valved water conduit connected to each tube bundle, a condensation collection tray located beneath each tube bundle which is above the lowermost tube bundle, conduit means at least partially disposed in one of said gaps for flowing condensate from each tray into the bottom of the housing by way of said one gap, a condensate collection means below the lowermost tube bundle for receiving condensate from each tray, and the separate tube bundles being vertically aligned with the width of the tube bundles being progressively larger from the top tube bundle to the lowermost tube bundle whereby the gas condensing capacity of said bundles increases and said gaps progressively decrease from the top tube bundle to the lowermost tube bundle.

4,134,451
HEAT EXCHANGER ELEMENTS AND OTHER CHEMICAL PROCESSING ELEMENTS COMPRISING METAL COATED, HEAT STABILIZED IMPERVIOUS GRAPHITE

Louis A. Conant, 218 Chapel Hill Dr., Rochester, N.Y. 14617; Wilbur M. Bolton, 162 Vollmar Pkwy., Rochester, N.Y. 14623, and James E. Wilson, Box 123, Livonia, N.Y. 14487

Filed Dec. 23, 1976, Ser. No. 754,035
Int. Cl.[2] B01J 1/00; B28F 21/02
U.S. Cl. 165—133 13 Claims



1. In a heat exchanger or chemical processing structure comprising an impervious graphite tube made impervious by filling the voids of a porous graphite tube with a synthetic resin, the improvement which comprises said impervious graphite tube having a layer of metal over the outer surface of said tube and being under high compression at room temperature due to said layer of metal having been applied to said outer surface of said tube at an elevated temperature by vapor deposition, and the synthetic resin portion of said impervious graphite tube being partially thermally degraded by heat treating said impervious graphite tube at a temperature above about 180° C. for a period of time sufficient for said tube to lose from about 0.25 to about 3 percent of its weight; whereby the metal armored partially thermally degraded impervious graphite tube has higher shock resistance, substantially increased pressure tolerance and an impact strength at least 5 times greater than that of otherwise smaller uncoated impervious graphite tubes in which the synthetic resin portion is not partially thermally degraded.

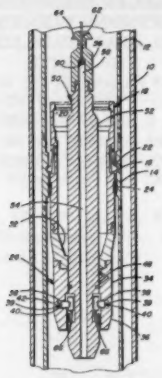
4,134,452
WELL TESTING TOOL

George F. Kingelin, Rosenberg, Tex., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sep. 14, 1977, Ser. No. 833,183
Int. Cl.[2] E21C 23/02
U.S. Cl. 166—133 16 Claims

16. In a well testing tool adapted to be run into a well, set in a locking mandrel in the well and retrieved from the well on a

wire line, said tool including a tubular stem that is run into the locking mandrel on a wire line, locked in the locking mandrel by locking dogs that move radially inward to prevent upward movement of the stem during the testing, is released by lifting by wire line, and is sealed around its periphery to prevent upward flow between the stem and the locking mandrel, the improvement comprising an adapter secured to the lower end of the locking mandrel, said adapter having a central opening therethrough, a locking member secured to the lower end of



the adapter, said adapter and locking member having a central opening therethrough into which the tubular stem can be run on a wire line, said central opening in the locking member being of smaller diameter than the central opening of the mandrel, the radially moving locking dogs being located in the locking member, and springs in the locking member urging the locking dogs inwardly to lock the tubular stem in the locking mandrel, said springs being compressible to allow outward movement of the locking dogs on lifting the tubular stem on a wire line.

4,134,453

METHOD AND APPARATUS FOR PERFORATING AND SLOTTING WELL FLOW CONDUCTORS

Robert G. Love; Robert Q. Shelton, both of Duncan, Okla., and Joseph B. McCalla, Jr., Corpus Christi, Tex., assignors to Halliburton Company, Duncan, Okla.

Filed Nov. 18, 1977, Ser. No. 852,887
Int. Cl.[2] E21B *43/114*
U.S. Cl. 166—298 **8 Claims**

1. A method of cutting openings in a non-metallic flow conductor secured in a wellbore in a solution mining operation comprising the steps of:

supporting a jet nozzle head on one end of a continuous string of steel tubing;

running said steel tubing and said jet nozzle head into said non-metallic flow conductor until said nozzle head is at the depth at which the openings are desired in said non-metallic flow conductor;

providing said jet nozzle head with a plurality of discharge jet nozzles arranged in a plurality of vertically spaced arrays, each array having a plurality of said jet nozzles arranged in a common horizontal plane, each said jet nozzle having a diameter in the range of 0.03125 inches to 0.093 inches and arranged in a predetermined configuration such that each said jet nozzle is positioned 90° from the adjacent said jet nozzles in the same horizontal nozzle array while being positioned 45° from the adjacent said jet nozzles in other vertically spaced nozzle arrays, said jet nozzle head including centralizer means on the exterior thereof to center said jet nozzle head in said non-metallic flow conductor in said wellbore;

positioning said jet nozzle of said jet nozzle head within one to 20 nozzle jet diameters of said non-metallic flow conductor;

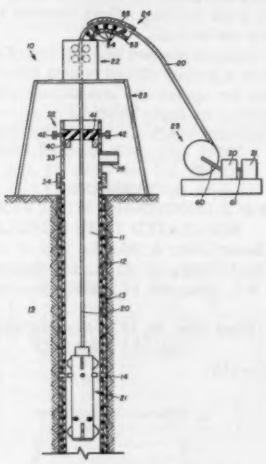
pumping a fluid through said steel tubing and out said jet nozzle head until openings are cut in said non-metallic flow conductor by said fluid;

sealing around said tubing at a quickly releasable wellhead including rubber gasket means on said non-metallic flow conductor and retaining said fluid in the annulus within said non-metallic flow conductor around said steel tubing above said jet nozzle head and out through a side outlet in said wellhead below the point of sealing around said steel tubing; and

removing said steel tubing and said jet nozzle head from said well.

8. A system for cutting holes in a non-metallic flow conductor in a wellbore in a solution mining operation comprising:

a jet nozzle head having a plurality of jet nozzles arranged in a plurality of vertically spaced arrays, each array having a plurality of said jet nozzle arranged in a common horizontal plane, each jet nozzle having a diameter in the range of 0.03125 inches to 0.093 inches and arranged in a predetermined configuration such that each said jet nozzle is positioned 90° from the adjacent said jet nozzles in the same horizontal nozzle array while being positioned 45° from the adjacent said jet nozzles in other vertically spaced



nozzle arrays, to direct jets of fluid at said non-metallic flow conductor in said wellbore for cutting said holes in said non-metallic flow conductor, said jet nozzle head including centralizer means on the exterior thereof to center said jet nozzle head in said non-metallic flow conductor;

a string of continuous steel tubing connected at a first end with said jet nozzle head;

a storage reel having a fluid conducting hub connected with the opposite second end of said string of continuous steel tubing for storing said string of continuous steel tubing and conducting fluid into said second end of said string of continuous steel tubing s said string of continuous steel tubing is moved in said wellbore and said reel is rotated to pay out and take up said string of continuous steel tubing on said reel;

fluid pump means connected with said hub for pumping a fluid to said hub of said reel;

a continuous tubing injector supported above said well including a tubing guide assembly for guiding said continuous steel tubing between said injector and said storage reel; and

a quickly releasable wellhead connectable on said non-metallic conductor including rubber gasket means for sealing

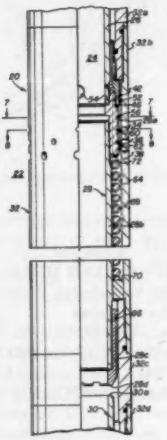
around said string of continuous steel tubing is run into and pulled from said non-metallic flow conductor.

4,134,454

MULTI-STAGE SLIDING VALVE FLUID OPERATED AND PRESSURE BALANCED

Donald F. Taylor, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 21, 1977, Ser. No. 835,058
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—320 **16 Claims**



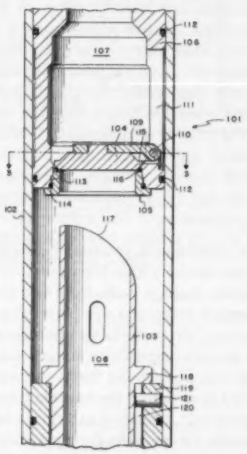
1. An installation comprising:
a fluid source region;
a fluid starved region;
tool means;
tool actuator means for actuating said tool means, said tool actuator means being axially movable;
pressure generating means for utilizing fluid within said fluid starved region for generating a source of pressurized fluid;
operator means affected by said source of pressurized fluid, said operator means being axially movable; and
a sliding valve for admitting fluid from said fluid source region to said fluid starved region so that said pressure generating means has sufficient fluid for generating a source of fluid pressurized an amount sufficient to cause said operator means to move said actuator means a distance sufficient to actuate said tool means, said sliding valve comprising:
housing means,
passage means extending laterally through said housing means and communicating between said fluid source region and said fluid starved region,
seat member means carried by said housing means and including abutment seat means and a surface extending from said seat means,
means for controlling flow through said passage means and including valve mandrel means axially movable with respect to said housing means between a first position and a second position and resilient seal means carried by said valve mandrel means for sealingly engaging said seat means when said valve mandrel means is in its first position,
means for yieldably urging said valve mandrel means towards its first position,
means responsive to the pressure of said fluid source region and said fluid starved region for at least substantially pressure balancing said valve mandrel means when said valve mandrel means is in its first position, and
staged fluid flow restriction means for restricting fluid flow through said passage means during at least a portion of the movement of said valve mandrel means between its first and second positions, said staged fluid flow restriction means including a surface on said valve mandrel means adapted to be disposed opposite said surface of said seat member means when said valve mandrel means is in its first position so that said two surfaces define a restricted effective fluid flow area through said passage means during an initial portion of movement of said valve mandrel means from its first position towards its second position and additionally including second stage restriction means for providing graduated increasing flow areas through said passage means during a subsequent portion of movement of said valve means from its first position towards its second position.

4,134,455

OILWELL TUBING TESTER WITH TRAPPED VALVE SEAL

Norman W. Read, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jun. 14, 1977, Ser. No. 806,568
Int. Cl.[2] E21B *43/12*
U.S. Cl. 166—334 **5 Claims**



1. A tubing tester for placement in tubing strings in an oilwell borehole to test for pressure leaks in said tubing springs; said tester comprising:
(a) an elongated tubular housing;
(b) a cylindrical tubular mandrel means telescopically mounted in said housing;
(c) pivotable valve means in said housing arranged for closing off the inner bore of said housing, said pivotable valve means including a pivotally mounted valve element having a frustoconically shaped sealing surface;
(d) valve seal means rigidly mounted in said housing below said valve element,
(e) said mandrel means having an abutment surface thereon arranged to abut said valve element and pivot it to open the bore of said housing to the bore of said mandrel means;
(f) said valve seat means includes an annular seal surface matingly engageable with said valve element sealing surface and having an annular pocket around a mid-portion of said seal surface to receive and mount an annular elastomeric seal, said seal pocket being generally cross-sectionally triangularly shaped and having annular in-turned lips on opposed edges thereof extending sufficiently to effectively trap said seal element within the confines of said pocket with a portion of said seal element extending out of

said seal pocket for sealing engagement with said pivotable valve means sealing surface; and

(g) said housing has a sleeve threadedly mounted below said annular seal surface such that an upper portion of said sleeve forms a lower side of said pocket which provides for easy installation and removal of said seal element by installation and removal of said threadedly mounted sleeve.

4,134,456

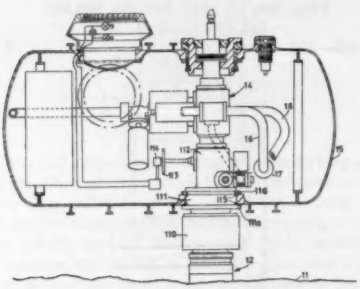
SUB-SEA WELL HEADS

Kenneth Ball, Hightown, England, assignor to Vickers-Intertek Limited, London, England

Division of Ser. No. 685,676, May 12, 1976. This application Feb. 23, 1977, Ser. No. 771,357

Int. Cl.[2] E21B *33/035*

U.S. Cl. 166—356 **1 Claim**



1. Means for mounting a pressure resistent capsule and a christmas tree contained within the capsule to a sub-sea wellhead with minimum leakage paths from said wellhead into said capsule, said capsule being of a size permitting the entrance of personnel thereinto for performing operations on said christmas tree, said means comprising a unitary member at the foot of the christmas tree penetrating the lower wall of the capsule and having a first part within the capsule containing a master valve and a second part extending exteriorily beyond the lower wall of said capsule, means sealingly supporting said capsule on said unitary member intermediate the first and second parts thereof, and a connector entirely exterior of said capsule connecting said wellhead and the second part of said unitary member whereby all leakage paths from the wellhead to the interior of the capsule are eliminated except by way of the master valve in the first part of said unitary member.

4,134,457

EMERGENCY FIREMAN LIFE-SUPPORT DEVICE

Raymond F. O'Reilly, 2 Elderbury La., Valley Stream, N.Y. 11581

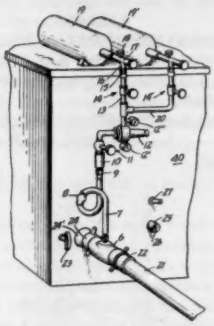
Filed Jan. 6, 1977, Ser. No. 757,381

Int. Cl.[2] A62C *31/00*

U.S. Cl. 169—16 **1 Claim**

1. In a fire fighting vehicle having a fire fighting water outlet with a coupling, the improvement comprising:

a portable fitting having an inlet for detachable connection to said coupling and an outlet for detachable connection to a fire fighting hose, a second inlet to said fitting having a check valve therein, a valved portable source of air under pressure connected to said second inlet whereby said fire fighting hose may be cleared of water and air may be delivered to the hose outlet by cutting off the water



outlet at the vehicle and opening the valve from the air source.

4,134,458

SPRINKLER HEAD

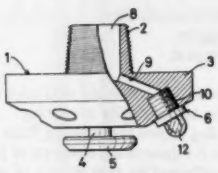
Katsuhiko Kimura, No. 8, 5-chome, Mandai-nishi, Sumiyoshi-ku, Osaka-shi, Osaka-fu, Japan

Filed Jun. 24, 1977, Ser. No. 809,719

Claims priority, application Japan, Jul. 13, 1976, 51/83771; Oct. 18, 1976, 51/127041

Int. Cl.[2] A62C *37/08*

U.S. Cl. 169—37 **6 Claims**



1. A sprinkler head comprising a body formed with a water passage, a heat sensing element, and a water pressure indicator mounted on said body to communicate with said water passage, said water pressure indicator having a tube, a cap mounted thereon, and an indicating means mounted watertight therebetween and adapted to protrude toward said cap under water pressure, whereby indicating the presence of water under pressure.

4,134,459

ROTARY CUTTING EQUIPMENT

L. Blair Hotchen, 149 W. 20th St., North Vancouver, B. C., Canada

Continuation-in-part of Ser. No. 605,953, Aug. 19, 1975, abandoned. This application Sep. 8, 1976, Ser. No. 721,254

Int. Cl.[2] E21C *9/00*

U.S. Cl. 173—32 **34 Claims**

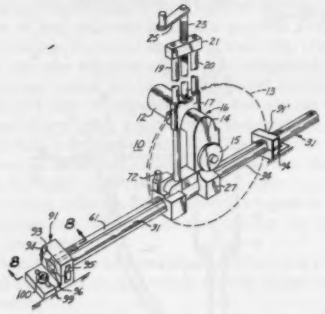
1. Apparatus for movably mounting and guiding rotary cutting equipment, comprising in combination:

an elongate track support having a circular cross-section;

at least two distinct, mutually spaced elongate tracks extending along said track support and projecting from said track support outwardly beyond the periphery of said circular cross-section;

mounting means for mounting rotary cutting equipment on said track support, said mounting means including a carriage to which the rotary cutting equipment is attached,

said carriage having means for engaging the said tracks and exerting substantially all of its weight thereon, so that the remainder of the circular cross-section of the track support is substantially free from bearing the weight of the carriage; and



means on said carriage and on said track support, located beyond the periphery of said circular cross-section, for propelling, and for selectively arresting, said carriage relative to said tracks.

4,134,460

HYDRAULIC DRILLING DEVICE

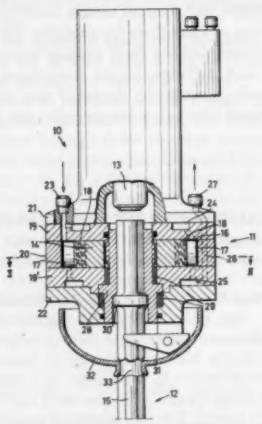
Günter Klemm, Wenkhausen, Fed. Rep. of Germany, assignor to Firm. Ing. Günter Klemm, Drolshagen, Fed. Rep. of Germany

Filed May 12, 1977, Ser. No. 796,303

Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621755

Int. Cl.[2] E21B *3/00*

U.S. Cl. 173—163 **2 Claims**



1. A hydraulic drilling device of the type having a drill hammer with an impact piston for striking the end of a drill to impart axial motion thereto, and having a hydraulic motor for rotating the drill, said motor coaxially surrounding the drill and comprising:

a motor housing mounted coaxially at the forward end of said drill hammer, the outside diameter of said housing being greater than the diameter of said drill hammer, said housing including a stator ring sandwiched between a pair of face plates, said stator ring having an elliptic interior shape which defines the wall of a cylinder space,

a circular rotor situated within said stator ring coaxial with said drill, said rotor having a diameter conforming to the minor axis of said stator ring elliptic shape, said rotor having a plurality of radially extending vanes, each vane being movable radially and spring biased into contact with said cylinder space wall, said rotor having a coaxial bore therethrough, said bore having a non-circular geometric shape,

flow channel means in said face plates for directing the flow of hydraulic fluid through said cylinder space so as to exert force on said vanes and rotate said rotor, said means comprising:

a hydraulic fluid inlet fitting and a hydraulic fluid outlet fitting extending from the annular rear wall of said motor housing so as to facilitate connection to hydraulic fluid flow lines extending parallel to the axis of said drill hammer at a radius less than that of said housing periphery,

a first annular channel within one of said face plates and a second annular channel within the other of said face plates, said annular channels having different radii, each channel communicating to a respective one of said hydraulic fluid fittings and communicating to said cylinder space via a respective set of bores in the respective face plates, hydraulic fluid entering said inlet fitting flowing through one of said channels and the associated set of bores into said cylinder space where it exerts force on said vanes to rotate said rotor, said fluid exiting via the other set of bores, the other channel and said outlet fitting, and

a replaceable adapter sleeve situated within and having the same exterior shape as said rotor bore, the interior of said sleeve being configured like the cross-section of said drill, said drill being received within said sleeve so that said rotor, sleeve and drill rotate in unison under pressure of said hydraulic fluid on said vanes, drills of different size or cross-sectional configuration being accommodated by separate replaceable adapter sleeves having the same exterior shape but each having an interior shape configured like the respective drill cross-section, said drill being free to move axially with respect to said adapter sleeve under impact from said piston.

4,134,461

MARINE STRUCTURE AND METHOD OF DRILLING A HOLE BY MEANS OF SAID STRUCTURE

Everhard C. Blomsma, Rijswijk, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 1, 1977, Ser. No. 821,059

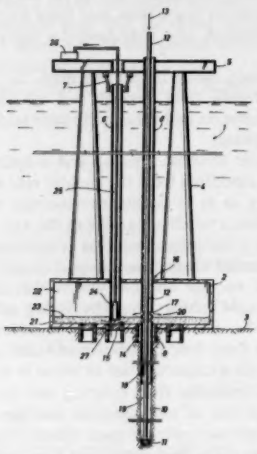
Claims priority, application United Kingdom, Aug. 4, 1976, 32501/76

Int. Cl.[2] E21B *15/02, 7/18*

U.S. Cl. 175—9 **8 Claims**

1. Marine structure adapted for being positioned on the bottom of a body of water and extending upward above the surface thereof, said structure comprising a drilling platform having a laterally-extensive hollow base and at least one conductor pipe, at least extending between the top of the platform and the chamber formed in the hollow base of the structure, said conductor pipe being provided with openings in the wall thereof, which openings communicate with an underwater

chamber forming part of the structure, and pumping means having the suction side thereof in communication with said



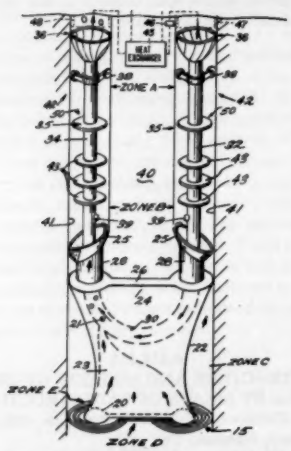
chamber, the outlet of said pumping means being outside the underwater chamber.

4,134,462

GEOTHERMAL ENERGY RECOVERY

Rufus G. Clay, 5500 Byers, Fort Worth, Tex. 76107

Division of Ser. No. 485,319, Jul. 2, 1974, Pat. No. 3,991,817.
This application Sep. 16, 1976, Ser. No. 723,903
Int. Cl.[2] E21V *37/16*
U.S. Cl. 175—16 **5 Claims**



1. Apparatus for drilling through rock formations, said apparatus including

(a) means for drilling through rock and forming a portion of said rock into two shafts at the same time, said means including an electric resistance heating element capable of being heated to a temperature well above the melting point of said rock formation without itself melting, deteriorating, or deforming excessively, and a single drill body,

(b) means for supplying electric power to said element, and

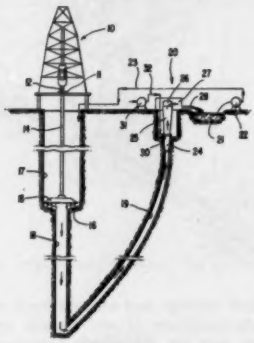
(c) means for circulating a fluid down one of said shafts through the drill body and up the other shaft and carrying off a portion of said rock.

4,134,463

AIR LIFT SYSTEM FOR LARGE DIAMETER BOREHOLE DRILLING

James H. Allen, Lakewood, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Jun. 22, 1977, Ser. No. 808,872
Int. Cl.[2] E21C *23/00*
U.S. Cl. 175—53 **14 Claims**



1. In a large diameter borehole having an annulus area between the drill stem and the wall of the borehole through which drilling fluid is transported to the borehole bottom and a return passageway for the drilling fluid returning from the borehole bottom, an air lift system comprising:

plenum means, located in said return passageway, having an expanding chamber through which the drilling fluid passes, said plenum means comprising a conduit having a tapered horn shape with a throat located at its lower end forming the entrance; and

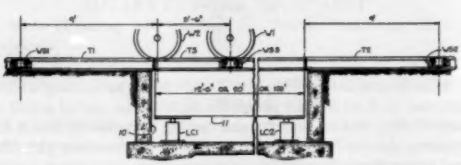
means, located at the entrance of said plenum means, for diffusing gas into the drilling fluid passing through said plenum means, the plenum means chamber expanding in the direction of fluid flow for enabling the flow velocity of the diffused drilling fluid passing therethrough to be constant, said diffusion means comprising an apertured tube extending across the throat of said tapered conduit, said apertured tube being connected to the discharge of an air pump.

4,134,464

IN-MOTION CAR WEIGHING SYSTEM

Bernard A. Johnson, Deerfield, Ill., and Thomas M. Parkinson, Cwnbran Gwent, England, assignors to Mangood Corporation, Chicago, Ill.

Filed Jun. 22, 1977, Ser. No. 809,028
Int. Cl.[2] G01G *19/04, 19/413*
U.S. Cl. 177—3 **34 Claims**



1. A system for in-motion weighing of freight cars that comprises:

spaced first and second tracks having aligned pairs of rails;

a weighbridge, that is mounted between said first and second tracks and that has a third track, as the platform of said weighbridge, with gaps between the ends of its pair of rails and the rails of said first and second tracks, said first,

second and third tracks providing a path of travel for the cars;

first and second sets of load cells, said sets being mounted under said platform on opposite sides of the central transverse plane of said weighbridge and the load cells of each set of load cells being connected to provide an output voltage corresponding to the weight of the load applied to that set of load cells and located to provide a rapid rise of output voltage from said first set of load cells when an axle passes onto the adjacent end of said weighbridge;

wheel sensing means having a component mounted beside one of said rails of said first track and spaced from said first end of said third track of said weighbridge a distance greater than the distance between adjacent axles of a truck of a freight car and a distance less than the distance between the inner axles of trucks of a freight car, said component being constructed to provide a signal at an output in response to a wheel of an axle passing the location of said component;

control means that is connected to said first and second sets of load cells and to said wheel sensing means and that is constructed:

to count the signals from said wheel sensing means as a count of the number of axles of a freight car passing the location of said component of said wheel sensing means;

to count the number of rapid rises of output voltage from said first set of load cells as a count of axles of a freight car passing onto said adjacent end of said weighbridge;

to determine a count representing the total number of axles of the freight car, when the counts of signals from said wheel sensing means and the counts of rapid rises of output voltage from said first set of load cells are in first coincidence;

to determine when the count of the number of rapid rises of output voltage from said first set of load cells is the count representing total number of axles of the freight car;

to restart the count of signals from said wheel sensing means whenever the count of signals from said wheel sensing means is twice its count at the time of the coincidence; and

to restart the count of rapid rises of output voltage from said first set of load cells when its count is twice the count at the time of the coincidence;

means operative in response to said control means: for axle weighing, after said control means has counted each rapid rise of output voltage from the first set of load cells, to convert the output voltages, from said first and second sets of load cells, for a first predetermined period of time to digital information corresponding to the weight of an axle on the weighbridge and to total the weights of axles, including the weight of the axle that provides the last rapid rise of output voltage from said first set of load cells by which said control means determines that the count of rapid rises is the count representing the total number of axles of the freight car; or

for truck weighing, after said control means has determined that the count of signals from said wheel sensing means and the count of rapid rises of output voltage from said first set of load cells are in said coincidence, to convert the output voltages from said first and second sets of load cells for a second predetermined period of time to digital information corresponding to the weight of a truck of the freight car on the weighbridge, to repeat the conversion for said second predetermined period of time, after said control means has determined that the count of rapid rises of output voltage is the count representing the total number of axles of the freight car, to digital information that corresponds to the weight of the other truck of the freight car on the weighbridge, and then to total the weights of the two trucks of the freight car; or

for entire car weighing, after said control means has determined that the count of rises of output voltage from said first set of load cells is the count representing the total number of axles of the freight car, to convert the output voltages from said first and second sets of load cells for a third predetermined period of time to digital information corresponding to the total weight of said freight car; and

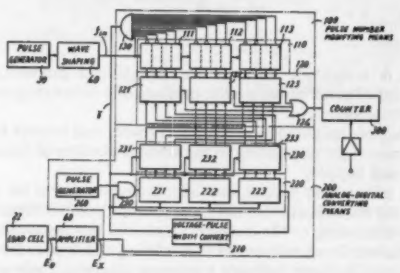
print means to print out the total weight of the freight car in response to said control means that provides a signal after the total weight of the freight car has been obtained.

4,134,465

APPARATUS FOR MEASURING WEIGHT OF BULK MATERIAL CONVEYED BY BELT CONVEYOR

Hisataka Takahama, Amagasaki, and Hitoshi Kimura, Kashiwara, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Dec. 16, 1975, Ser. No. 641,166
Claims priority, application Japan, Dec. 20, 1974, 50-2711
Int. Cl.[2] G01G *11/14*
U.S. Cl. 177—16 **20 Claims**



1. An apparatus for measuring the weight of a material conveyed by a conveying apparatus over a finite interval, comprising:

means for conveying a continuous bulk material;

pulse generator means operatively coupled to said conveying means for generating pulses of the frequency associated with the conveying speed of said conveying means;

analog signal means operatively coupled to said conveying means for generating an analog signal associated with the weight of said material conveyed by said conveying means;

analog/digital convertor means responsive to said analog signal from said analog signal generating means for converting said analog signal into a bit parallel coded digital signal representative of said analog signal;

counter means responsive to said speed associated frequency pulses from said pulse generating means for counting the number of said speed associated pulses for providing bit parallel count output pulses therefrom;

number signal generating means responsive to said speed associated frequency pulses from said pulse generating means and to said counter means for generating a signal representative of a predetermined number of said speed associated frequency pulses;

said analog-to-digital converter means being responsive to said number signal generating means through latch means for outputting said bit parallel coded digital signal therefrom;

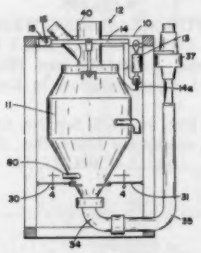
logic means interconnected with said counter means and said analog-to-digital converter means, responsive to said bit parallel count output pulses from said counter means, and said bit parallel coded digital signal from said analog-to-digital converter means for reducing the number of bit parallel count output pulses within the time period for said predetermined number of speed associated pulses, as a function of said bit parallel coded digital signal; and

means for withdrawing an output from said logic means, representative of the weight of material conveyed over said finite interval.

4,134,466
WEIGH JET ASSEMBLIES

James R. Steele, Stillwater, Minn., assignor to Dynamic Air Inc., St. Paul, Minn.

Filed May 2, 1977, Ser. No. 792,902
Int. Cl.[2] G01G *13/10*
U.S. Cl. 177—114 8 Claims

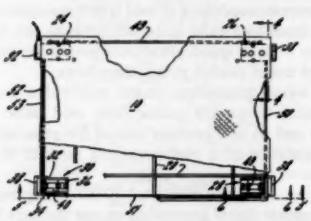


1. A weigh jet assembly for weighing a predetermined amount of material within the confines of a conveying system:
a main support frame;
a hopper mounted to said support frame, said hopper having means for responding to the amount of material located in said hopper;
an inlet in said hopper, said inlet including means for isolating the hopper from the supply source when the means for responding to the amount of material reaches a predetermined level, said means for isolating the hopper from the supply source includes a pressure activatable piston having a head for forming sealing engagement with the hopper, said pressure activatable piston loosely mounted within the confines of a cylindrical sleeve to thereby allow air to pass between the sleeve and the piston to thereby pressurize said hopper; and
further means connected to said hopper for discharging material from said hopper.

4,134,467
LOW PROFILE PLATFORM SCALE

Chester S. Czyryk, Silver Lake, Wis., assignor to Mangood Corporation, Chicago, Ill.

Filed Apr. 4, 1977, Ser. No. 784,038
Int. Cl.[2] G01G *19/02*
U.S. Cl. 177—133 7 Claims

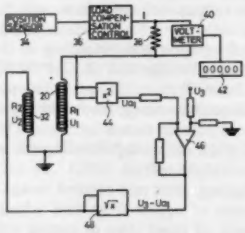


1. In a low profile platform scale, the combination comprising:
a rigid rectangular platform,
a base assembly for supporting said rectangular platform, and adapted to rest on an underlying surface, said base assembly comprising
four independent corner pads, one each under a corner of said rectangular platform, and
means connecting each corner pad to corner pads under adjacent corners of said platform, said connecting means including slightly flexible, inelastic rods arranged beneath and adjacent borders of said platform in a rectangular array, and fastened to, for fixing the spacing between, adjacent corner pads while permitting any corner pad to tilt slightly in any direction because the connecting rods bend, and
means supporting said platform on said base assembly, comprising a load cell element mounted in cantilever fashion on each corner pad, and means coupling each load cell element to carry a corner of said platform and deflect in response to the load on said platform, each said load cell element including means providing a weight representing signal responsive to deflections of said load cell element,
said coupling means including a tension member connected by ball and socket means to means on both said platform and the respective load cell element,
means for adjusting the effective length of each of the tension members to level the scale on out of level floors,
both said connecting means between corner pads which include connecting rods that bend, and said coupling means between said load cell elements and said platform which include ball and socket couplings that swivel, allow any of said corner pads to accomodate local irregularities in said underlying surface and assume a slightly tilted position without affecting the other corner pads or substantially diminishing the accuracy of response of the associated load cell.

4,134,468
ELECTROMAGNETIC SCALE WITH DECREASED TEMPERATURE VARIATION

Paul Luchinger, Greifensee, and Enrico Realini, Uster, both of Switzerland, assignors to Mettler Instrumente AG, Schweiz, Switzerland

Filed Feb. 3, 1978, Ser. No. 874,895
Claims priority, application Switzerland, Jun. 15, 1977, 7350/77
Int. Cl.[2] G01G *3/14*
U.S. Cl. 177—210 EM 13 Claims

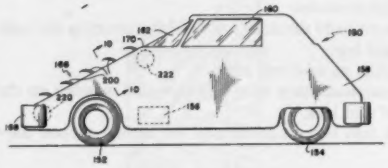


1. In a scale having main coil means for carrying a first current varying as a function of the load being weighed, whereby the heating power generated by said main coil means varies as a function of said load causing loaddependent temperature changes: additional heat generating means arranged near said main coil means; and control means connected to said additional heat generating means, for controlling the heating power generated by said additional heat generating means in such a manner that the sum of the heating powers generated by said main coil means and said additional heat generating means is substantially the same at a first and second predetermined value of said load, said first and second predetermined value being substantially equal, respectively, to the no load and full load value of said load.

4,134,469
LINEAR TURBINE

Ralph A. Davis, Wichita, Kans., assignor to Turbopanel Motors, Inc., Wichita, Kans.

Filed Oct. 8, 1976, Ser. No. 730,859
Int. Cl.² B60L *11/00*; H02J *7/14*
U.S. Cl. 180—65 DD **7 Claims**



1. A fluid motion actuated power panel comprising a series of spaced elongated turbine blades, means for guiding each of said blades to serially travel a closed endless path that includes substantially straight first and second portions that are in spaced parallelism to each other, means for maintaining the longitudinal extents of the blades traveling the first and second portions of the path in spaced parallelism with each other, said first and second portions of the path being in closely spaced proximity to each other with free running clearance and unobstructed space between the blades moving therealong, orienting means for turning the power panel while maintaining the path portions of the panel oblique to the direction of ambient fluid flow and while also maintaining the extents of the blades traveling said path portions substantially perpendicular to the direction of ambient fluid flow, said path portions and the blades being so constructed and arranged that the blades move along said first and second portions in opposite directions and so that relative ambient fluid flow can sequentially pass through and react with the blades moving along the first and second portions of the path, mechanical means encompassed in their entirety in connections of the guide means to the blades for maintaining the blades moving respectively along the first and second portions of the path oriented to react with a relative ambient fluid flow sequentially passing through the blades moving along such portions to urge the described movement of the blades, and energy transducing means operatively coupled to the blades to be driven by the latter to produce an energy output, said blades being arcuate in transverse section and having concave sides, with the blades moving along the first and second path portions having their concave sides facing directions that are respectively directed generally opposite the direction of their movements along their respective path portions, and means for mounting the panel so that the extents of said path portions lie in a common vertical plane with the extents of said path portions being substantially inclined to the vertical, with said means for mounting including a self-propelled and dirigible automotive vehicle.

4,134,470
CRUISE CONTROL SYSTEM USING POSITIVE PRESSURE TO BOOST VACUUM

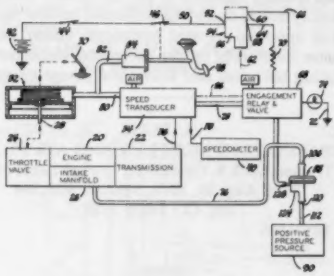
John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 27, 1977, Ser. No. 864,527
Int. Cl.² B60K *31/00*
U.S. Cl. 180—108 **6 Claims**

1. In a vehicle road speed control system having a differential pressure powered servomotor controlling the vehicle engine to maintain a desired vehicle speed, transducer means receiving vehicle actual speed and desired speed signals and subatmospheric pressure and atmospheric pressure and generating a control pressure from said received pressures in accordance with said speed signals, said control pressure being delivered to said servomotor, and a source of subatmospheric pressure, the improvement comprising:

means for boosting the level of subatmospheric pressure from said source to a lower subatmospheric pressure level, said boosting means including

an aspirator having a superatmospheric pressure inlet and first and second subatmospheric pressure ports, said first subatmospheric pressure port being fluid connected with said source of subatmospheric pressure, said second subatmospheric pressure port being fluid connected to deliver subatmospheric pressure to said transducer means, said superatmospheric pressure inlet and said first subatmospheric pressure port being in alignment and having located therebetween a nozzle and an expansion chamber in series so that superatmospheric pressure flows from said

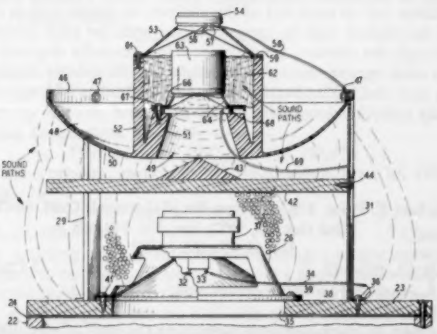


superatmospheric pressure inlet through said nozzle and said expansion chamber into said first subatmospheric pressure port, said second subatmospheric pressure port opening into said expansion chamber through a check valve which opens only to permit flow from said second subatmospheric pressure port toward said first subatmospheric pressure port, the flow of fluid at superatmospheric pressure through said expansion chamber entraining fluid from said expansion chamber and boosting subatmospheric pressure at said second subatmospheric pressure port to a lower subatmospheric pressure level than the pressure level of the subatmospheric pressure provided by said source.

4,134,471
NARROW ANGLE CYLINDRICAL WAVE FULL RANGE LOUDSPEAKER SYSTEM

Daniel L. Queen, Chicago, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Continuation of Ser. No. 712,881, Aug. 9, 1976, abandoned. This application Oct. 28, 1977, Ser. No. 846,366
Int. Cl.² H04R *1/20*
U.S. Cl. 181—147 **7 Claims**



1. A loudspeaker system which has an output such that its

frequency response at any angle at which a listener is positioned is uniform comprising,

an enclosure formed with a slot near its top which substantially extends about its periphery,

a low frequency speaker attached to the top of said enclosure to direct sound energy into said enclosure and out said slot,

a horizontal planar member supported above said low frequency speaker,

a convex radiating horn surface supported above said horizontal planar member,

a hollow driving member with its center opening joined to said radiating horn, and

a second speaker mounted to the top of said hollow member to supply sound energy through said hollow member such that it impinges on said horizontal planar member and radiates outwardly in the horizontal plane between said radiating horn and said horizontal planar member.

4,134,472

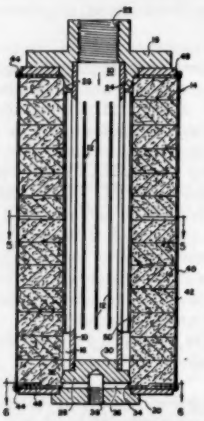
COMBINATION MUFFLER AND AIR FILTER

John B. Trainor, 2375 S. Commerce, Walled Lake, Mich. 48088

Filed Aug. 29, 1977, Ser. No. 828,744

Int. Cl.[2] F01N *1/24*

U.S. Cl. 181—258 **4 Claims**



1. A combination muffler and air filter comprising a canister having therethrough an axial opening, such canister including a perforated cylinder, annular members with muffling and filtering properties stacked in the perforated cylinder, and a closure disc on each end of the perforated cylinder compressably holding the annular members in the perforated cylinder, a retainer cap on each end of the canister, an intake port in one of the retainer caps in communication with the axial opening through the canister, a tubular member centrally disposed in the axial opening through the canister and threadably engaged on each end in the retainer caps, and a plurality of longitudinally disposed slots in the tubular member.

4,134,473

PORTABLE SCAFFOLD

Herbert E. Prior, 6786 Barbara Dr., Sebastopol, Calif. 95472

Filed Oct. 19, 1977, Ser. No. 843,438

Int. Cl.[2] F16M *11/00*

U.S. Cl. 182—92 **5 Claims**

1. A portable scaffold comprising:

a plank; and

a pair of frame members supporting the ends of said plank; each of said frame members comprising;

a pair of legs;

inwardly facing channel members carried on the upper ends of said legs;

said channel members being of an inside width to receive the edge portions of said plank;

a pair of toggle arms interconnecting said legs intermediate the lengths thereof; and

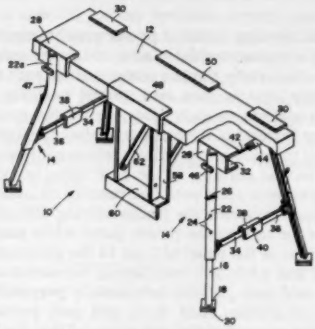
complementary means each pivotally connected near the upper end of one of said legs for adjusting the spacing therebetween;

an externally threaded rod slidably extending through one of said legs;

a crank on said rod; and

a complementary internally threaded member on the other of said legs;

said legs being conditioned for limited pivotal movement



about their connections with said complementary means when said toggle arms are collapsed to withdraw said channel members from a position firmly gripping said plank to a retracted position wherein said plank is slidable but retained therein, including a step to said plank comprising;

a pair of rigid depending members;

a rigid step member interconnecting said depending members near the lower ends thereof;

a first channel member interconnecting the top ends of said depending member and received over an edge portion of said plank;

a second channel member facing said first channel member and received over the opposite edge of said plank; and

threaded means interconnecting said channel members for adjusting the spacing therebetween.

4,134,474

OBSERVATION STAND

Harold L. Stavenau, and Reuben W. Kaplan, both of Owatonna, Minn., assignors to Truth Incorporated, Owatonna, Minn.

Filed Jan. 31, 1978, Ser. No. 873,791

Int. Cl.[2] A47C *9/10*; A45F *3/26*

U.S. Cl. 182—187 **12 Claims**

12. A stand for mounting on a tree comprising:

a frame having a front side, a rear side, an upper section, a middle section and a lower section;

mounting structure for securing the frame to a tree including an upper band detachably secured to the upper end of the frame and adapted to encircle a tree, said upper band having tree-engaging studs; and

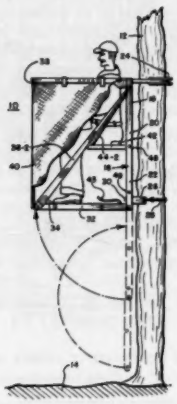
a V-shaped bracket secured to the lower section of the frame, opening outwardly from the rear side, said V-shaped bracket having tree-engaging studs;

an articulated ladder pivotably secured to the lower section of the frame, said ladder mounted for rotation between a climbing position extending vertically and downwardly from the frame and a base position extending horizontally

and outwardly from the front side of the frame, said articulated ladder including

an upper section having an upper end and a lower end formed by two horizontally spaced-apart support secured together by a plurality of vertically spaced rungs,

a lower section having an upper and a lower end formed



by two horizontally spaced-apart supports secured together by a plurality of vertically spaced-apart rungs,

pins connecting the lower end of the upper section for rotation about the upper end of said lower section, and

a floor secured to said lower section; and

means for retaining the articulated ladder in the base position.

4,134,475

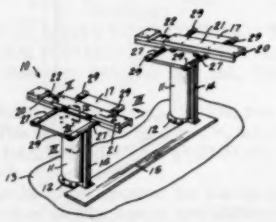
ADJUSTABLE PAD HYDRAULIC LIFT

Raymond E. Jones, Lexington, Ky., assignor to Dura Corporation, Southfield, Mich.

Filed Jun. 20, 1977, Ser. No. 808,116

Int. Cl.[2] B66F 7/16

U.S. Cl. 187—8.75 **16 Claims**



9. In an adjustable pad hydraulic lift structure wherein a vehicle supporting pad is vertically movable by means of a hydraulic piston to engage under an automotive vehicle undercarriage for lifting the vehicle:

a bolster plate having means for securing the bolster plate to the top of the piston;

deflectable guide rods carried in parallel coextensively extending relation along opposite sides of the bolster plate;

said pad comprising a bar extending over and across said guide rods and projecting beyond opposite sides of said bolster plate;

bearing means on said pad in guiding engagement with said rods to facilitate adjusting the position of the pad over the bolster plate longitudinally along said rods;

and load transfer means on said pad between said opposite sides of the bolster plate for engaging the top of the bolster plate to transfer vehicle load from the pad to the bolster plate;

said bearing means and said rods cooperating for holding said pad and said load transfer means free from said bolster plate in the unloaded condition of the pad to facilitate moving the pad along said rods, and the rods being deflectable and thereby permitting depressing of said pad for engagement of said load transfer means with the top of the bolster when the pad is subjected to vehicle load.

4,134,476

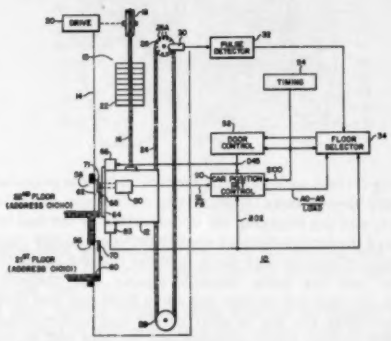
ELEVATOR SYSTEM

Walter Zolnerovich, Jr., Newark, Ohio, and William N. C. Leang, Waukesha, Wis., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 26, 1977, Ser. No. 845,520

Int. Cl.[2] B66B 3/02

U.S. Cl. 187—29 R **7 Claims**



1. An elevator system, comprising:

a building having a plurality of floors, a hoistway, and openings from the floors to the hoistway,

hoistway doors at the floors operable between open and closed positions to open and close the openings to the hoistway,

an elevator car mounted for movement in the hoistway to serve the floors,

control means for controlling the operation of said elevator car, including memory means responsive to movement of said elevator car for storing the position of the elevator car in the building relative to a floor position,

address means, including address indicia mounted on at least one of said hoistway doors for movement therewith,

and reading means on said elevator car for reading said address indicia during movement of said at least one hoistway door,

said memory means being additionally responsive to said reading means.

4,134,477

SLIDING CALIPER DISC BRAKES

Anthony Asquith, Nuneaton, England, assignor to Girling Limited, Birmingham, England

Filed Mar. 25, 1977, Ser. No. 781,476

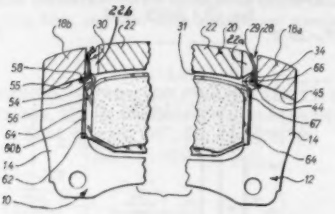
Claims priority, application United Kingdom, Mar. 26, 1976, 12258/76

Int. Cl.[2] F16D 55/224

U.S. Cl. 188—73.3 **7 Claims**

1. A sliding caliper disc brake comprising: a torque member adapted to be fixedly mounted adjacent a brake disc; a caliper member guided for axial sliding relative to said torque member; a pair of pads, one on each side of the disc; said caliper member being U-shaped and having a bridge portion which straddles the periphery of said disc; said bridge portion having two circumferentially spaced end surfaces at least one of which

defines a rail; said torque member having two bridge portions which straddle the disc, and which are disposed at circumferentially spaced locations, one on either side of said bridge portion of said caliper member; each bridge portion of the torque member having an inner end face facing an adjacent one of said end surfaces of the caliper member, and having an under-surface facing the outer periphery of said disc; a springy guide member interposed between said at least one end surface of the bridge portion of the caliper which defines said rail and the inner end face of the adjacent bridge portion of the torque member; said springy guide member being so shaped as to engage the said rail to prevent radially outward movement of the rail relative to said springy guide member; said end face and said end surface being spaced apart to enable said springy guide member and said end surface of said caliper to move radially outwardly together relative to said torque member;



and a tag on said springy guide member which is permanently resiliently biassed away from said end surface and towards said end face; said tag engaging the undersurface of the said bridge portion of the torque member so as to prevent radially outward movement of said springy guide member relative to the torque member; said tag being movable against said resilient bias towards the said end surface and away from said end face to a position where the tag is clear of the said undersurface, to allow the springy guide member and the said end surface to move radially outwardly together relative to the torque member, and wherein said springy guide member further includes radially inwardly extending, second, tag portions located at the axial ends of the springy guide member for respectively engaging surfaces on said portions of the torque member lying on the two sides of the disc, to thereby locate the springy guide member radially inwardly relative to the torque member.

4,134,478

BRAKE APPARATUS INCLUDING PLURAL ACTUATING ASSEMBLIES

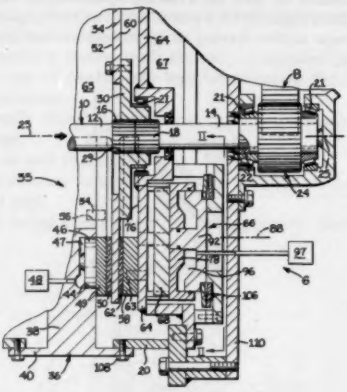
David J. Balzer, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 18, 1977, Ser. No. 816,789
Int. Cl.[2] F16D *65/16*
U.S. Cl. 188—106 P **9 Claims**

1. In a brake apparatus of the type including and generally contained within a case having a separating wall, a disc rotatably mounted in the case on an axis, a first brake actuating assembly having a body connected to the case, and first and second braking members located on either side of the disc, first means operative at one side of the wall for biasing the first braking member against the disc, and the disc against the second braking member and toward the separating wall in a first direction braking rotation of the disc, a second brake actuating assembly connected to the case and having a projection extendable through the separating wall, and second means operative at the other side of the wall for axially biasing the projection against the second braking member, the second braking member against the disc and the disc against the first braking member and toward the body in a second direction opposite the first direction braking rotation of the disc, the improvement comprising:

said second brake actuating assembly having a housing, a piston reciprocally mounted in said housing and defining a chamber therebetween;

said second means including resilient compression spring means for biasing said piston and said projection toward said second braking member in the absence of a preselected fluid pressure in said chamber; and



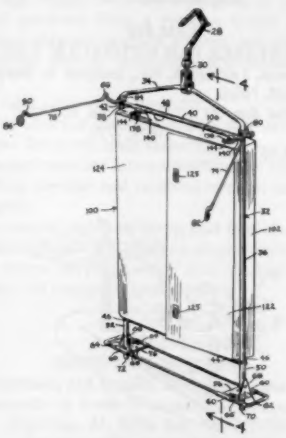
said housing being free to move axially with respect to said wall in the absence of fluid pressure in said chamber.

4,134,479

CARRY-ABOUT WARDROBE UNIT

Ira J. Crider, Jr., 16603 Norwood Dr., Minnetonka, Minn. 55343

Filed May 5, 1977, Ser. No. 794,038
Int. Cl.[2] A45C *3/00, 13/00*
U.S. Cl. 190—49 **8 Claims**



1. A carry-about wardrobe unit comprising a frame having a lower and an upper end over which a suit may be draped, said frame including a single upper rod adjacent said upper end, a single horizontal lower rod adjacent said lower end, a single first side rod connected to one end of said upper rod and connected to one end of said lower rod and a single second side rod connected to the other end of said upper rod and to the other end of said lower rod, said first and second rods extending between said upper and lower rods, a generally rectangular case for containing miscellaneous articles therein, said upper, lower and side rods forming a generally rectangular opening and said case being receivable in said opening, said case including a top end wall, a bottom end wall, parallel side walls, a rear wall and a front closure means with said top and bottom walls being spaced a lesser distance than said upper and lower rods

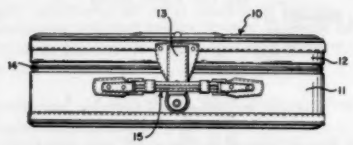
and said side walls being spaced a lesser distance than said first and second side rods whereby said case substantially fills said rectangular opening, and said top end wall, said bottom end wall and said parallel side walls being wider than said upper, lower, first and second side rods so that said rear wall and said front closure means of said case reside forwardly and rearwardly, respectively, from said rods, means fastened to said top wall of said case and spaced from both said rear wall and said front closure means for releasably engaging said upper rod, means fastened to said bottom wall and spaced from both said rear wall and said front closure means for releasably engaging said lower rod, an angled hanger rod having its opposite end connected to the upper ends of said first and second side rods, said angled hanger rod having a central apex, and a single hook attached to said angled top rod at said apex, whereby said frame may be hung by means of said single hook.

4,134,480

HANDLE ASSEMBLY FOR LUGGAGE CASE

Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.

Filed Mar. 15, 1978, Ser. No. 886,645
Int. Cl.[2] A45C *13/26*
U.S. Cl. 190—58 B **9 Claims**



1. In a handle assembly for a luggage case of the type in which a hand-grip element is attached to the body of the luggage case, the improvement wherein said hand-grip element comprises a selected length of flexible strap folded to provide a central portion of multiple plies of strap and loops of a single ply of strap at opposite ends of the central portion, said strap having therein a longitudinally coextensive semi-rigid member which enables said strap to be deformed into various contours and which causes said strap to retain a desired contour until forcibly changed to another contour.

4,134,481

BACK-PEDAL BRAKE OPERATOR AND BRAKING SYSTEM FOR MULTI-SPEED BICYCLES

Franklin J. Calderazzo, 144 Flax Hill Rd., Norwalk, Conn. 06854

Continuation-in-part of Ser. No. 530,838, Dec. 9, 1974, abandoned. This application Feb. 13, 1976, Ser. No. 658,129
Int. Cl.[2] B60K *29/02*; F16D *67/00*
U.S. Cl. 192—5 **31 Claims**

1. A back-pedal brake operator for use on a multi-speed bicycle of the chain derailer type or gear shifter type having a frame, a pedal crank rotatably mounted on the frame, sprocket means for driving the chain and at least one brake mechanism, said operator comprising:

drive plate means adapted for connection with the pedal crank for rotation therewith about the axis of rotation of the pedal crank,

said drive plate means and said sprocket means being mounted for limited relative rotational motion therebetween,

a ratchet gear having a plurality of ratchet teeth,

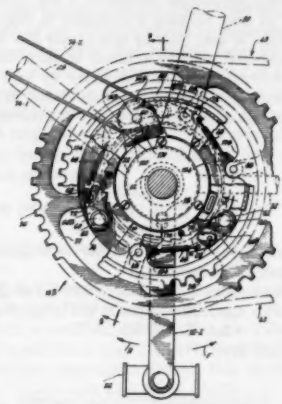
a bearing member rotatably mounting said ratchet gear on said drive plate with said ratchet gear teeth extending around said axis concentric therewith,

a brake actuator connected to said ratchet gear for movement therewith for actuating said brake mechanism,

a stop member engageable with the frame for preventing said brake actuator and ratchet gear from rotating in the forward direction when the rider pedals the pedal crank forwardly,

at least one pawl pivotally mounted on one of said means and engageable with and disengageable from said ratchet gear,

at least one pawl control element mounted on the other of said means for causing each such pawl to move into engagement with said ratchet gear in response to the limited relative rotational motion occuring in one direction between said drive plate means and said sprocket means



upon back pedalling by the rider for turning said brake actuator in the reverse direction for actuating the brake means, and

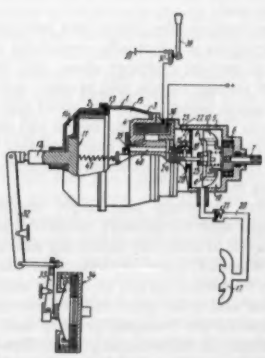
said pawl control element being adapted for causing disengagement of said pawl from said ratchet gear in response to the limited relative rotational motion occurring in the other direction between said drive plate means and said sprocket means upon forward pedalling of said pedal crank against a chain load on said sprocket means.

4,134,482

DEVICE TO EFFECT CONTROL OVER THE FRICTION CLUTCH OF A TRANSPORT VEHICLE

David G. Polyak; Evgeny I. Lebedev; Jury K. Esenovsky-Lashkov, all of Moscow; Boris N. Pyatko, Melitopol, and Vladimir M. Mosyagin, Zaporozhie, all of U.S.S.R., assignors to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut, Moscow, U.S.S.R.

Filed Aug. 20, 1976, Ser. No. 716,148
Int. Cl.[2] F15B *13/10*; F16D *43/284*
U.S. Cl. 192—91 R **4 Claims**



1. A device to effect automatic control over the friction

clutch of a transport vehicle, comprising: a housing whose interior space is adapted to communicate with a source of negative pressure and with the atmosphere; a traversable member movable between a first position in which the interior space of said housing communicates with the negative pressure source and a second position in which the interior space of said housing communicates with the atmosphere, said member being operatively connected at one end with a centrifugal governor in such manner that the movement of said member between said first and said second positions is controlled by movement of the centrifugal governor; a link mounted in the interior space of said housing traversable in response to the pressure variation in said interior space, said link being operatively interconnected with an actuator of said clutch in such manner that movement of said member by said centrifugal governor controls said actuator; and an elastic member interconnecting said link and the other end of the traversable member.

4,134,483

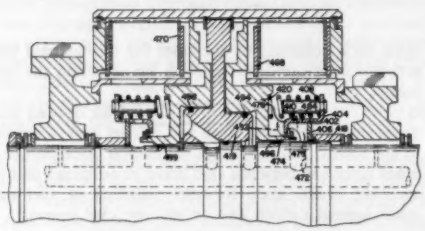
LUBRICANT COOLED FRICTION CLUTCH WITH TWO RATES OF FLOW

Joachim Horsch, Lombard, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation-in-part of Ser. No. 599,801, Jul. 28, 1975, abandoned. This application Apr. 7, 1977, Ser. No. 785,385

Int. Cl.[2] F16D *13/72*

U.S. Cl. 192—113 B **8 Claims**



1. Frictionally engageable, fluid cooled assembly for a transmission drive having:

input and output members comprising a supporting shaft and supported gear means rotatably related therewith;

primary reciprocal piston means shiftably and hydraulically actuably related to the shaft and having a fluid reaction plate at an adjacent side of the piston means;

friction engaging means about the shaft associated with the nonadjacent side of the piston means and frictionally engageable thereby during a shift to establish a drive coupling the input and output members;

first passage means in the shaft for transmitting clutch cooling flow; and

primary reciprocal lube sleeve and secondary lube sleeve means bridging in a mutually contacting, bridged position across an annular chamber about said shaft terminating said first passage means, said primary and secondary lube sleeve means being supported about said shaft generally inside said friction engaging means and mutually defining an unbridged space when noncontacting to open second passage means communicatively connected to said friction engaging means;

said primary reciprocal lube sleeve means connected for movement with the primary reciprocal piston means, all with respect to relatively unmoving secondary lube sleeve means whereby, upon predetermined initial shift of the primary reciprocal piston means for causing friction engagement and consequent relative movement of separation between the bridging primary and secondary lube sleeve means, a valve transit primary flow path so opened between the annular chamber outlet and the second passage means at the unbridged space is an exposed annular area with a circumferential length coextensive with that of both the primary and the secondary lube sleeve means;

said secondary lube sleeve means where bridging with the primary lube sleeve means each confronting the other with a relatively moveable smooth shoulder of ring-valve-presenting contact and establishing cooperation in a substantially continuous ring of sealing engagement circumscribing said shaft, said secondary lube sleeve means also presenting flange means for seating thereon return springs for the primary reciprocal piston means, and further presenting third passage means in the secondary lube sleeve means effective independently of the first and second passage means for permanently open, communicative connection to said friction engaging means.

4,134,484

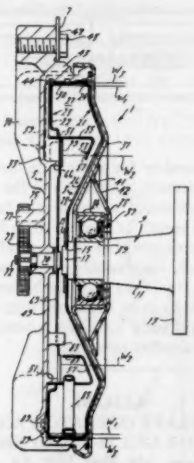
FLUID COUPLING

Jere R. Lansinger, Bloomfield Hills, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 28, 1977, Ser. No. 791,762

Int. Cl.[2] F16D *31/00*

U.S. Cl. 192—58 B **20 Claims**



1. A fluid coupling comprising:

A. a rotatable input member;

B. an output member surrounding said input member, defining a working space therebetween, and relatively rotatable with respect to said input member;

C. fluid means operative to drivingly interconnect said input member and said output member through said working space;

D. fluid reservoir means connected to said output member;

E. passage means fluidly interconnecting said reservoir means and said working space;

F. valve means operatively associated with said passage means and moveable between:

1. a first, closed position in which flow from said reservoir to said working space is inhibited; and

2. a second, open position in which flow from said reservoir to said working space is unblocked;

G. means defining a fluid chamber within said input member;

H. means for pumping fluid from said working space to said fluid chamber; and

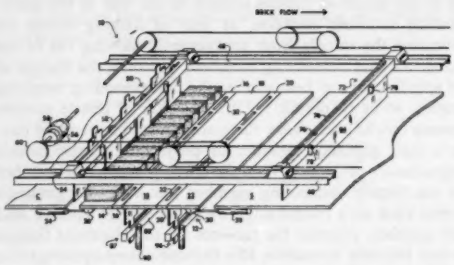
I. means for delivering fluid from said fluid chamber to said reservoir.

4,134,485

BRICK BLENDING METHOD AND APPARATUS

Lonnie L. George, 3000 Shamrock Dr., Greensboro, N.C. 27408

Filed Dec. 17, 1976, Ser. No. 751,733
Int. Cl.[2] B65G 47/30
U.S. Cl. 198—456 12 Claims



1. Method of effecting intra-row blending of bricks comprising the steps of:

(a) at a blending station mechanically collecting and grouping bricks delivered in a plurality of parallel rows, each initially containing the same number of bricks;

(b) transferring selected bricks from a plurality of spaced positions in one row to a corresponding plurality of positions in a second row to form a new intra-blended row; and

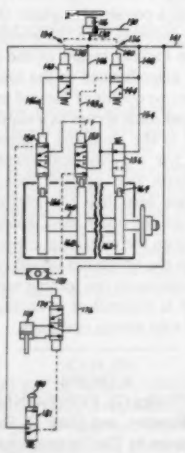
(c) transferring selected bricks from a plurality of spaced positions corresponding to the spaced positions of step (b) in a third row into the openings formed in said first row during step (b).

4,134,486

WORKPIECE DETECTION CIRCUIT

Robert J. Grone, Covington, Ky., assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Jun. 24, 1977, Ser. No. 809,800
Int. Cl.[2] B65G 47/42
U.S. Cl. 198—466 9 Claims



1. In a material handling apparatus, a workpiece detection circuit, comprising:

(a) means for sensing a workpiece, said sensing means generating a first signal indicative of the presence or absence of the workpiece;

(b) a pair of parallel gating circuits including a bistable gate capable of assuming two separate states in each of said parallel circuits, each of said bistable gates being responsive to said first signal for assuming a first state;

(c) means for simultaneously applying a sample signal to each of the bistable gates in timed relationship to an operation of the material handling apparatus, one of the bistable gates being operative to produce an output signal in response to the sample signal in the first state and the other bistable gate being operative to produce an output signal in response to the sample signal in the second state;

(d) means for alternatively inhibiting each of the bistable gate output signals in timed relationship to an operation of a portion of the material handling apparatus, said inhibiting means impelling said bistable gates to a second state irrespective of the presence or absence of said first signal;

(e) a common control gate responsive to the output signals of each of the bistable gates; and

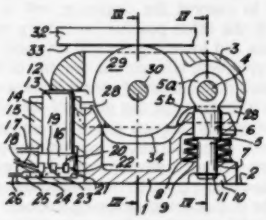
(f) means responsive to said common control gate for controlling the operation of another portion of the material handling apparatus.

4,134,487

DEVICE FOR SUPPORTING OR GUIDING A ROLLING LOAD

René Veragen, Chatou, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 659,518, Feb. 19, 1976, abandoned.
This application Aug. 22, 1977, Ser. No. 826,767
Claims priority, application France, Feb. 25, 1975, 75 05834
Int. Cl.[2] B65G 13/02
U.S. Cl. 198—782 4 Claims



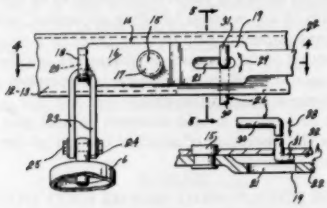
1. A deviee for supporting and guiding a rolling load, comprising wheels for driving and also for carrying and also for guiding the load, a stationary frame supporting said wheels, at least one flat track on said load receiving said wheels, bearings for each of said wheels, a rocker-arm provided with first and second end portions supporting said bearings, elastic means supporting said first end portion of said rocker-arm on a bearing surface on said frame, a movable stop supporting said second end portion on said frame, a first position for said stop in which said wheels are in contact with said track, a second position for said stop in which said wheels are withdrawn from said track, an upper part for said stop allowing when said stop is in said first position the pivoting of said rocker-arm around said second end portion by said elastic means, a first driving means for said movable stop moving said stop between said first position and said second position and means for pivoting said first end portion with respect to an axis parallel to the surface of said track, said first driving means including a first jack, a piston for said jack and a free end for said piston forming a part of said movable stop, said first jack including mechanical locking means for selectively maintaining said piston in said first position and also in said second position, said mechanical locking means including a spacer member moving within the bottom end of a cylinder for said first jack beneath that end of said piston which is remote from the free end thereof, a second driving means for said spacer members for displacing said member into a location for maintaining said piston of said first jack in said first position and into a location for maintaining said piston in said second position.

4,134,488

FASTENING DEVICE FOR TROUGHING ROLL OF A CONVEYOR BELT SYSTEM

Ernest N. Bigney, Mt. Royal, Canada, assignor to Jeffrey Manufacturing Division Dresser Industries Canada Ltd., Montreal, Canada

Filed Feb. 9, 1977, Ser. No. 766,862
Claims priority, application Canada, Feb. 17, 1976, 245892
Int. Cl.[2] B65G *15/08*
U.S. Cl. 198—827 **9 Claims**



1. A fastening device for securing at least one end shaft of a catenary troughing roll assembly to a fixed side frame for support of a conveyor belt, the fastening device comprising a suspension plate pivotably mounted intermediate of its length on the fixed side frame, connecting means extended from one end of the suspension plate and pivotably secured to the end shaft of the catenary troughing roll assembly and locking means mounted on the fixed frame and engageable with the other end of the suspension plate opposite from the connecting means, the locking means in one position holding the troughing roll assembly to support the conveyor belt in an operative location and in the other position permitting rotation of the suspension plate and lowering the roll assembly from contact with the conveyor belt; wherein the one end of the suspension plate from which the connecting means is suspended is bent at right angles with respect to the plane of the plate and has a vertically disposed slot through which the connecting means is engaged, the slot extending above and below the longitudinal axis of the suspension plate passing through the pivot mounting of the suspension plate on the fixed frame; the slotted vertically bent end of the suspension plate being disposed in an oblique angular plane with respect to the longitudinal axis of the suspension plate passing through the pivot mounting of the suspension plate on the fixed frame to provide two spaced supporting points for said connecting means, one of said supporting points being disposed above the longitudinal axis of the suspension plate to accommmodate a maximum width conveyor belt and the other of said supporting points being disposed below the longitudinal axis of the suspension plate to accommodate a minimum width conveyor belt.

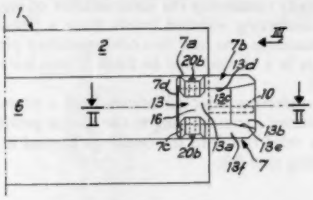
4,134,489

COUPLING DEVICE FOR A SCRAPER CONVEYOR TUB

Jean Sabés, Anzin, France, assignor to Societe Anonyme dite: J. Sabés & Cie, Anzin, France

Filed Aug. 5, 1976, Ser. No. 712,060
Claims priority, application France, Aug. 6, 1975, 75 24547; Feb. 16, 1976, 76 04209
Int. Cl.[2] B65G *21/00*
U.S. Cl. 198—861 **8 Claims**

1. A coupling device between two adjacent tubs of a scraper conveyor for mines, in which each tub comprises side members each having two superimposed lateral branches which are turned towards the inside and have between them an externally open longitudinal groove and which are arranged symmetrically relative to the vertical median plane of the tub, being joined together along a central longitudinal zone by a median plate and which have a preferably inverted M or sigma-shaped profile, said coupling device being of the type comprising a male connecting member integral with one of the ends of a side member, a female connecting member integral with the other end of the same side member, each of said connecting members being equipped with a retaining partition, a longitudinal slot and a lateral access opening issuing into said slot, a connecting spindle having two abutment flanges and which can be inserted into or removed from the slots via the access openings of the said members when the latter are at least approximately aligned and brought adjacent with one another, a recess for one of the abutment flanges located to the rear of the corresponding retaining partition, as well as locking means for preventing the spindle from unexpectedly moving out of the slots of the said connecting members, whereby the flanges of said spindle serve to bear against the corresponding retaining partition so as to permit the transmission of tensile stresses between two adjacent tubs, the male connecting member having a male guidance member or projecting portion which longitudinally projects beyond the corresponding side member and the female connecting member has a female guidance portion such as a connecting cavity serving to receive said male member, wherein the recesses for the abutment flanges are also laterally accessible, like the said access openings, the retaining partition of the male connecting member is located behind the projecting portion of the said member, the cross section of the connecting spindle has, at least during the fitting of said spindle in the slot and during its removal from the said



slot different dimensions in at least two directions which are preferably perpendicular to one another, with regard to the retaining partition the width of the access opening of each connecting member is less than the maximum dimension but more than the minimum dimension of the cross section of said spindle and the locking means of said spindle are arranged in such a way as to prevent the spindle from appearing in front of the access opening in a position in which the small dimension of its cross section coincides with the width of the said access opening wherein the locking means of the connecting spindle comprises retaining grips formed in the retaining partitions in the vicinity of the access openings thereof and the rear faces of the retaining partitions each serves as a supporting face against which can bear one of the abutment flanges, and wherein the connecting spindle has a cylindrical shape and, on the one hand, is provided with two parallel flats, spaced from one another by a distance less than the minimum height of the lateral opening and, on the other hand, has a diameter which is at least slightly less than the maximum diameter of the locating slot, but greater than the minimum height of said lateral opening and the locking means of the joining member are arranged in such a way that it is maintained in an angular position relative to the edges of said access openings.

4,134,490

GAS STORAGE CONTAINMENT

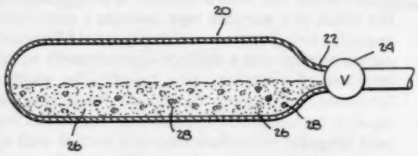
Pierre P. Turillon, Ramsey, and Gary D. Sandrock, Ringwood, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 881,030
Int. Cl.[2] F17C *11/00*; C01B *1/26*; B65D *25/00*; F16L *55/04*
U.S. Cl. 206—0.7 **5 Claims**

1. A gas-containing means comprising
(A) a pressure vessel with a valved port;
(B) a first particulate solid inside said pressure vessel capable of combining with said gas which first particulate solid

changes in volume with changes in the amount of gas combined therewith;

(C) a second particulate solid inside said pressure vessel inert to said gas and mixed with said first particulate solid, said second particulate solid having a spatially extended particle structure encompassing free space to thereby exhibit a packing density not greater than 30% of the theoretical density of the solid material comprising said second particulate solid;



(D) the total volume of (1) the volume of said first particulate solid when in the gas charged condition and (2) the volume of the space occupied by said second particulate solid in the condition under which apparent density is measured being no greater than about 75% of the volume of said pressure vessel; and

(E) the second particulate solid occupying about 5% to about 40% of the total volume of said first particulate solid when in the gas-charged condition and the volume of space occupied by said second particulate solid in the condition under which apparent density is measured.

4,134,491

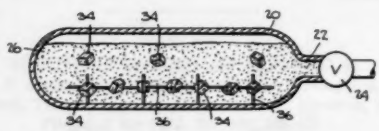
HYDRIDE STORAGE CONTAINMENT

Pierre P. Turillon, Ramsey, and Gary D. Sandrock, Ringwood, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Feb. 24, 1978, Ser. No. 880,960

Int. Cl.² F17C *11/00;* **C01B** *1/26;* **B65D** *25/00;* **F16L** *55/04*

U.S. Cl. 206—0.7 **8 Claims**



1. A gas-containing means comprising

(a) a pressure resistant vessel having a valved port,

(b) at least one collapsible structure in said vessel enclosing unavailable space, said structure being impermeable to solids and being collapsible at a stress less than the stress sufficient to plastically deform said vessel; and

(c) a multiplicity of solid, gas absorbing particles in said vessel occupying, when in the gas-free state, substantially less than the available space in said vessel, and, when in the gas-charged state, no greater than the available space in said vessel.

4,134,492

COFFEE CUP AND CONTAINER

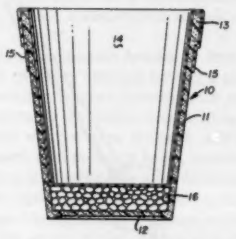
Paul A. Lucas, 2605 St. Clair Ave., East Liverpool, Ohio 43920

Continuation-in-part of Ser. No. 735,111, Oct. 22, 1976, abandoned. This application Jun. 29, 1977, Ser. No. 811,432

Int. Cl.² B65D *25/08, 85/72*

U.S. Cl. 206—217 **5 Claims**

1. The combination of a beverage cup for dispensing a single portion of a beverage from a beverage concentrate contained within the cup, said cup comprising a drinking receptacle having a bottom and side walls with said side walls defining a rim, the bottom and lowermost portion of said walls defining an area for said beverage concentrate; and a section of an impervious very thin flexible film removably positioned inside the cup and detachably secured only to the outer surface of the cup side walls adjacent the rim of the cup to extend over the rim and down the outer side walls of said cup in an overlapping manner to cover all of the outer surface of the side wall adjacent the rim, said liner being spaced from the drinking receptacle bottom and defining a chamber enclosing said beverage



concentrate between said film and the bottom and lower side walls of said cup, that portion of the liner overlapping the rim normally covering all of the surfaces of the outer side walls of said cup against which a person's lips are engaged when drinking from said cup to maintain such surfaces germ free and sterilized, said film contacting the inner surface of said cup walls in a nonadhering manner so said film can be removed prior to activating said beverage concentrate.

4,134,493

PACKING RECEPTACLE

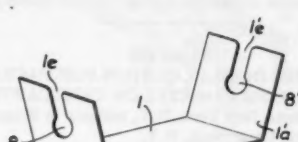
Karl Cech, Mödling, Austria, assignor to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H., Austria

Filed Dec. 2, 1977, Ser. No. 856,986

Claims priority, application Austria, Dec. 6, 1976, 9000/76

Int. Cl.² B65D *5/50*

U.S. Cl. 206—45.19 **6 Claims**

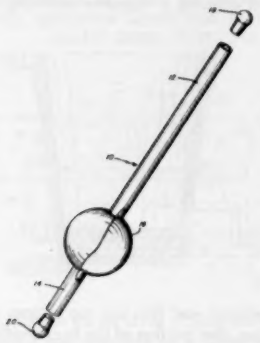


1. A packing receptacle for a headset having deformable earpieces, comprising a box and an insert which is removable from said box, said insert and the headset to be packed forming a loosely assembled unit, and said insert having a supporting base and a side wall on each end of said base engageable with said headset for providing protection against damage to said headset by maintaining a spacing between the earpieces and said box during transportion of said box, said insert base serving as a support for displaying and storing the headset to be transported in the packing receptacle, the insert comprising a base panel designed as a supporting surface having respective opposite end edges, an upwardly directed side panel rigidly connected to each edge of said supporting surface having an opening and communicating slot therein serving for fixing the headset to be packed in a definite position within and outside of said box.

4,134,494
COMBINATION STRAW AND STIRRER

Woon-Tong Wong, 14 Upton St., Boston, Mass. 02118

Filed Jan. 31, 1977, Ser. No. 763,984
Int. Cl.[2] B65D *85/54*; F25D *3/00*
U.S. Cl. 206—216 1 Claim

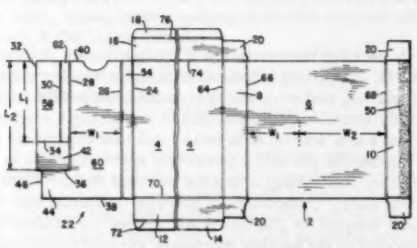


1. A combination straw, stirrer and liquid holder comprising;
an elongated hollow plastic structure defined only by an annular wall having an enlarged wall section and two elongated straw-like end wall sections extending from and integrally contiguous with the enlarged wall section,
said end wall sections having like circular cross-sections with one of said sections being longer than the other section and with the perimeter of the enlarged wall section substantially larger than that of the end wall sections,
said enlarged wall section having a volume greater than either end wall section with all hollow sections having fluid-communicating contiguous volumes,
said end wall sections extending from the enlarged wall section at diametrically opposite sides thereof so that said end wall sections are in linear alignment having opposite facing end openings,
said end wall sections each being at least of a length on the order of the length of the enlarged wall section,
said volume of said hollow structure adapted to receive a liquid filling less than the total volume thereof,
and plug means releasably sealing the end openings.

4,134,495
SINGLE SIZE DISPLAY CARTON FOR PACKAGING EITHER A TAPE CASSETTE OR TAPE CARTRIDGE

Herbert Friedman, New York, N.Y., assignor to Brugail Licensing Company, Great Neck, N.Y.

Filed Jun. 6, 1977, Ser. No. 804,001
Int. Cl.[2] B65D *85/672*
U.S. Cl. 206—387 8 Claims

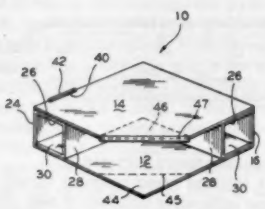


1. A uniform size carton for packaging either a tape cassette or tape cartridge comprising:
an outer carton consisting of top, bottom, front, rear and side walls, the length of said outer carton being at least as great as the length of a standard tape cartridge and the width of said outer carton being at least as great as the combined width of a standard tape cartridge and a standard tape cassette;
an inner carton portion including a vertically extending inner wall, the height of said vertically extending inner wall being at least as great as the thickness of a standard tape cassette, the length of said vertical inner wall being substantially the length of a standard tape cassette, said vertically extending inner wall being spaced from said outer carton side wall a distance approximately equal to the width of a standard tape cassette; a continuous horizontally extending inner wall being spaced from said outer carton bottom wall a distance approximately equal to the thickness of a standard tape cassette, the width of said horizontally extending inner wall being approximately equal to the width of a standard tape cassette; an inner side wall hingedly interconnecting said bottom wall and said horizontal inner wall; said vertically extending inner wall, said horizontally extending inner wall, said inner side wall and a portion of said bottom wall forming a first compartment for a standard tape cassette for preventing substantial movement of a packaged tape cassette in a vertical plane and in a first or lateral horizontal plane;
means for preventing substantial movement of a tape cassette packaged in the tape cassette carton in a second horizontal plane, said preventing means being located within said outer carton and being spaced from said outer carton front wall a distance at least as great as the length of a standard tape cassette, said preventing means being aligned with said tape cassette compartment.

4,134,496
DEVICE FOR PROTECTING A CORNER OF AN ARTICLE

Richard A. Smith, St. Charles, Mo., assignor to Container Corporation of America, Chicago, Ill.

Filed Jul. 3, 1978, Ser. No. 921,455
Int. Cl.[2] B65D *85/48*, *81/02*
U.S. Cl. 206—453 5 Claims



1. A device formed from a blank of paperboard or the like for protecting and cushioning a corner of an article, said device comprising:
(a) a pair of main panels of substantially similar size spaced from each other in parallel relationship;
(b) an end panel foldably joined at its opposite edges to corresponding edges of respective main panels and extending transversely therebetween;
(c) a hollow, substantially L-shaped internal member hinged to an edge of one of said main panels along a fold line disposed normal to said end panel;
(d) said internal member having first and second portions each including:
(i) inner and outer flaps foldably joined by a connecting flap positioned in parallel relationship to said main panels;
(ii) the outer flap of said first portion being foldably connected to the outer flap of said second portion along a hinge line;
(iii) said second portion being folded along said hinge line

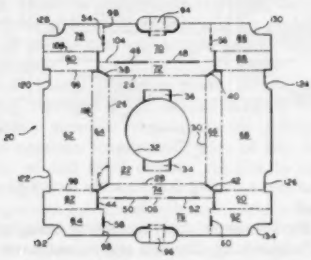
at right angles to said first portion and positioned in contacting engagement with said end panel.

4,134,497

SHOCK ABSORBING CARTON INSERT

Joseph Dlugopolski, Chicago, Ill., assignor to Fidelity Container Corp., Elk Grove Village, Ill.

Filed Aug. 10, 1977, Ser. No. 823,436
Int. Cl.² B65D *81/14*
U.S. Cl. 206—521 **5 Claims**



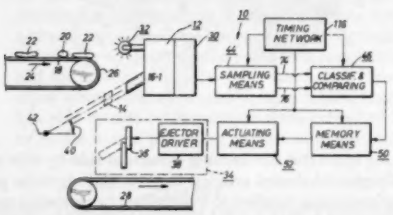
1. A shock-absorbing carton insert made from a blank having score lines defining a central panel with matched sets of two pairs of opposed side panels and matched sets of two pairs of opposed end panels interconnected by four corner panels, each of said corner panels being defined by hinge-forming score lines which are not aligned with but are spaced between and parallel with score lines forming inner ones of both said matched pairs of side and end panels, whereby said matched pairs of side and end panels form a rectangular, box-like container when the side panels are articulated, the side and end panels being proportioned to fold along said score lines to form erected ends which are much wider than the erected sides in order for the ends to project above and below the box-like container and thereby provide a shock-absorbing quality for a product enclosed within the box.

4,134,498

MULTIPLEXED SORTING APPARATUS

John D. P. Jones; Miles A. Smither, and Elias H. Codding, all of Houston, Tex., assignors to Geosource Inc., Houston, Tex.

Filed Jul. 12, 1976, Ser. No. 704,651
Int. Cl.² B07C *5/344*
U.S. Cl. 209—564 **25 Claims**



1. In an apparatus for sorting articles randomly disposed in an article stream, said apparatus having a plurality of viewer elements, each viewer element viewing one of a predetermined plurality of sectors of a viewed area through which said article stream is passed, means associated with each viewer element for generating a first and a second electrical signal each representative of light energy reflected at corresponding first and second wavelengths from an article passed through each of said sectors, the improvement comprising:

means for sampling each of said first and second electrical signals for transmission over corresponding first and second electrical transmission paths;

means connected within said first and second electrical transmission paths for generating a classification signal, each classification signal being functionally related to the ratio of said first and second electrical signal produced by said signal generating means associated with one of said viewer elements;

means for comparing each of said classification signals with a predetermined reference signal functionally related to a predetermined physical characteristic and for producing a reject signal responsive to a predetermined difference between one of said classification signals and said reference signal;

a single memory arrangement having at least one memory element, each memory element having a plurality of randomly addressable memory locations for storing a reject signal, each memory location corresponding to one of said sectors of said viewed area through which said article stream is passed, said memory being associated with said comparing means to store, for a predetermined period of time, a reject signal produced by said comparing means, said reject signal being stored in a memory location corresponding to the sector of the viewed area through which an article having the predetermined physical characteristic is passed, a location within said memory arrangement being addressed in synchronism with each sampling by said sampling means; and,

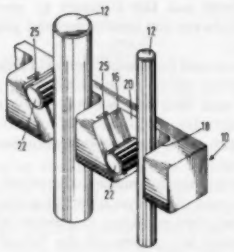
means responsive to a reject signal for ejecting an article from said article stream.

4,134,499

TOOL HOLDER

Siegfried Joswig, Kausen, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany

Filed Sep. 20, 1976, Ser. No. 724,978
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1975, 7530561[U]; Apr. 12, 1976, 7611478[U]
Int. Cl.² A47G *29/08*; A44B *21/00*
U.S. Cl. 211—66 **11 Claims**



1. A tool holder, comprising:

a gripping device for a tool shaft or handle, said gripping device being adapted for automatic gripping action due to the weight of the tool; said gripping device comprising:

two opposed side walls between which a tool shaft or handle may be supported; a rear wall joining said side walls and spacing them apart; said side walls and said rear walls defining a frontally open U-shaped portion;

one said side wall having a sloping surface which slopes toward the other said side wall in a plane perpendicular to said rear wall;

a gripping roller resting on said sloping surface and being movable therealong upon engagement therewith by a tool shaft or handle, and said roller coming into friction locking contact with the shaft or handle by wedge effect;

said roller having a T-shaped lug projecting from a side thereof and with respect to which said roller is rotatable; a slot passing through and also extending along said sloping surface parallel to said rear wall; the vertical member of said T-shaped lug passing through said slot; said sloping

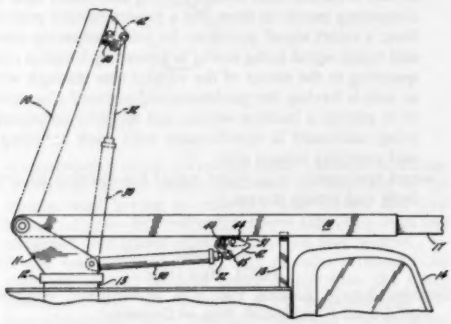
surface having a back side facing away from said other side wall; the transverse member of said T-shaped lug resting against said sloping surface back side adjacent said slot; said transverse member of said T-shaped lug comprising part of a cylindrical surface having a convex side which rests on said sloping surface back side and which is rollable along said back side upon pivotal motion of said T-shaped lug with respect to said sloping surface.

4,134,500

ACTUATOR LINKAGE FOR MOBILE DERRICKS AND THE LIKE

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Nov. 22, 1976, Ser. No. 743,984
Int. Cl.[2] G05S *1/04*; B66C *23/06, 23/60*
U.S. Cl. 212—59 R **11 Claims**



11. In a vehicle, a mobile derrick having a boom pivotally mounted on said vehicle and a hydraulic actuator pivotally connected to the vehicle for raising and lowering the boom, the improvement comprising linkage between the actuator and the boom comprising a rigid member pivotally connected to both the boom and the actuator to permit limited relative movement between the interconnected points of the boom and the actuator,

first pivot means for connecting said linkage to said actuator, and second pivot means mounting said linkage to said boom, said first and second pivot means being spaced apart such that said linkage is selectively engageable with said boom upon moving said actuator in a predetermined direction,

and resilient biasing means connected between said rigid member and said boom for urging said rigid member in the same direction as raising movement of the actuator so that downward movement of the boom is resisted by said biasing means.

4,134,501

TILTING SERVICE LIFT FOR AUTOMOTIVE EQUIPMENT WITH FOLDING LIFT UNIT

Shearer E. Tune, P.O. Box 652, Fulton, Ky. 42041

Filed May 10, 1977, Ser. No. 795,423
Int. Cl.[2] B66F *7/22*
U.S. Cl. 214—1 A **15 Claims**

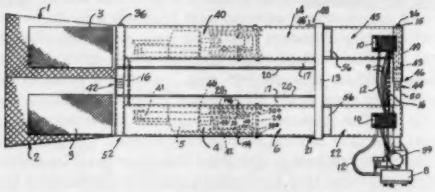
1. A device for tilting a vehicle to permit servicing of the running gear and underside thereof, comprising:

(a) a pair of spaced, parallel base beams, each base beam comprising an upwardly facing channel;

(b) a pair of spaced, parallel vehicle receiving platform beams, each platform beam comprising a downwardly facing channel disposed directly above a corresponding base beam and pivoted at one end thereto;

(c) a pair of connectors for said base beams and a pair of cross members connecting said platform beams wherein each of said base beam connectors and platform beam cross members comprises a pair of telescoping tubes, a bolt extending axially along one tube and havings its head protruding therefrom, a nut affixed within the other tube, and said bolt being threaded in said nut, whereby turning the bolt head serves to vary the overall length of the telescoped tubes and thereby the spacing between the base beams and the platform beams;

(d) at least one folding lift unit including a fluid pressure applying device and a lever mechanism entirely enclosed within the space formed by an upwardly facing base beam



channel and a mating downwardly facing platform beam channel;

(e) said fluid pressure applying device being connected to one of said mating channels and to said lever mechanism and said lever mechanism also being connected to the other of said mating channels; and

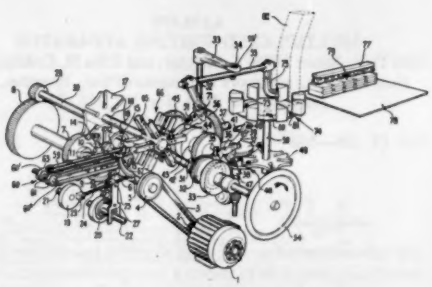
(f) means for applying fluid pressure to said pressure applying device whereby to tilt said platform beams relative to said base beams.

4,134,502

APPARATUS FOR FORMING GROUPS MADE UP BY A PLURALITY OF SIDE-BY-SIDE POSITIONED PILES OF PARALLELEPIPEDON SHAPED ARTICLES

Enzo Seragnoli, Bologna, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Mar. 22, 1977, Ser. No. 780,099
Int. Cl.[2] B65G *57/30*
U.S. Cl. 214—6 BA **5 Claims**



1. An apparatus for forming groups of side-by-side piles of parallelpipedal-shaped articles, in particular cigarette packets, the groups being supplied to a parcelling or cartoning machine, the apparatus including a rejecting and replenishing device for rejecting defective piles and replenishing said defective piles with non-defective piles, said apparatus comprising:

a vertically and reciprocatingly movable pile-forming means positioned upstream of said rejecting and replenishing device, for forming piles of a preselected number n of articles;

first and second means synchronously and reciprocatingly moving with a frequency equal to 1/n that of said pile-forming means, said first means for feeding individual piles into said ejecting and replenishing device, and said second means for sequentially removing piles from said rejecting and replenishing device, and for feeding successive piles

along an exiting channel, from which individual complete groups of side-by-side piles are conventionally fed to said parcelling or cartoning machine;

an intermittently and unidirectionally rotating wrapping wheel provided with a plurality of radially disposed pockets,

a first horizontal inlet channel along which individual articles are sequentially fed into each pocket of said wrapping wheel during each dwell thereof,

a second outlet channel coplanar with said first inlet channel, and

pushing means for sequentially removing individual articles from said radial pockets and for pushing said removed articles onto said second outlet channel further comprising:

a third channel extending above, parallel to and partially overlapping said second channel;

resiliently movable retaining means positioned along the opposite longitudinal sides of the overlapping area of said third channel relative to said second channel;

lifting means positioned underneath said second channel in alignment with said retaining means, and cyclically and reciprocatingly moved in a vertical direction by cam driving means for sequentially transferring articles from said second channel in a piled relationship above said retaining means;

a stepwise, unidirectionally rotating horizontal wheel provided with a plurality of radially disposed compartments coplanar with said third channel;

a fourth channel coplanar with said third channel and oppositely positioned relative to said horizontal compartmented wheel;

driving means for stepwise, unidirectionally rotating said horizontal compartmented wheel with a frequency submultiple relative to the cyclic frequency of said lifting means, and for dwelling a compartment and the relative oppositely disposed compartment in alignment, respectively, with said third channel and said fourth channel; and

a first and a second pushing means horizontally and reciprocatingly moved along a path parallel to and above said third channel and said horizontal compartmented wheel in unison actuated by cam driving means with a frequency equal to the dwelling frequency of said horizontal compartmented wheel, said first pushing means transferring individual piles from said third channel into that one of the compartments of the horizontal compartmented wheel which is dwelling in alignment with the same third channel, and said second pushing means for removing individual piles from said oppositely disposed compartment, and for pushing said piles onto said fourth channel, along which successive piles are approached together in a side-by-side relationship to form groups of piles to be fed to said parcelling or cartoning machine.

4,134,503

DUMPING APPARATUS FOR OPEN TOP VEHICLES

Charles J. Baker, Portland, Oreg., assignor to Royal Industries, Inc., Pasadena, Calif.

Filed Aug. 8, 1977, Ser. No. 822,551
Int. Cl.² B65G *67/24*
U.S. Cl. 214—46.3 **5 Claims**

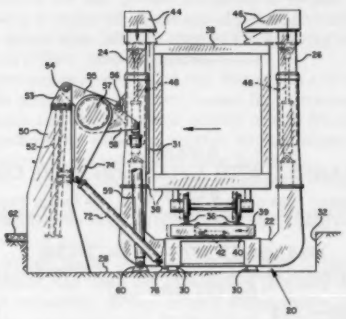
1. Apparatus for dumping an open top vehicle comprising an elongated vehicle receiver including a vehicle support deck,

clamping means for clamping a vehicle rigidly to said deck,

rigid support means adjacent said receiver extending above the elevation of said deck,

bolster means extending between said receiver and said support means and pivotally connected to each,

means for rotating said bolster means about said support means to effect elevation of said receiver relative to said support means,



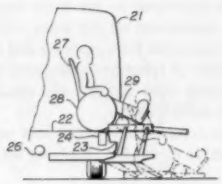
and means for rotating said receiver with respect to said bolster means when said receiver is in elevated position in the direction of said support means to effect dumping of said vehicle on the opposite side of said support means.

4,134,504

LIFT FOR WHEELCHAIRS

Louis Salas, and Philip M. Salzman, both of 3519 Ryder St., Santa Clara, Calif. 95051

Filed Sep. 21, 1976, Ser. No. 725,166
Int. Cl.² B60P *1/44*
U.S. Cl. 214—77 R **6 Claims**



1. A lift installed on a vehicle having a floor and vertical walls for a wheelchair or the like capable of lifting the wheelchair from a lower level to an upper level at said floor, comprising stationary frame means fixed to said vehicle below said floor and within the projection of said walls, a pair of opposed longitudinal track forming members on said stationary frame means, a pair of longitudinally slideable frame members horizontally slideable in said track forming members between an inner position within said vertical walls and an outer position, first actuating means for sliding said slideable frame members, each said slideable frame member having a longitudinal pivot block, a horizontal platform, a first and a second vertically extending link on each side of said lift, each said link pivoted at one end to said horizontal platform and at an opposite end to said pivot block, means for causing all of said links to pivot equiangularly, and second actuating means for pivoting said links to move said platform from a first position directly outward of said stationary frame means either to said lower level or to said upper level, whereby a wheelchair may be lifted on said platform from said lower level to said upper level or the reverse, said second actuating means comprising a pair of fluid cylinders disposed substantially horizontally and parallel to said slidable frame members, one said cylinder being on each side of said platform, one end of said cylinder being pivoted to said slidable frame member and the opposite end of said cylinder being connected to one said link to cause said link to pivot relation to said slidable frame member, said cylinders being located inward of said stationary frame means, said longitudi-

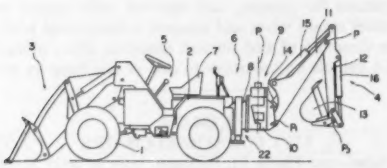
nal track forming members being below the floor of the vehicle and of a length that said lift is retractable entirely within the vertical projection of said walls of said vehicle.

4,134,505

WORK VEHICLE WITH A FLUID PRESSURE CIRCUIT SYSTEM

Makoto Watanabe, Izumi, Japan, assignor to Kubota, Ltd., Japan

Filed Mar. 17, 1977, Ser. No. 778,546
Claims priority, application Japan, Sep. 8, 1976, 51-121749[U]
Int. Cl.[2] E02F *3/32*
U.S. Cl. 214—138 F **1 Claim**



1. A work vehicle having a plurality of functions and including a work equipment pivotally mounted on a vertical axis on the work vehicle comprising:

drive means connected to the work equipment for pivoting the work equipment on the work vehicle,

actuator pump means for supplying and discharging fluid for the plurality of functions connected to said drive means for supplying fluid toward and discharging fluid away from said drive means,

a supply line connected between said actuator pump means and said drive means for supplying fluid toward said drive means,

a discharge line connected between said actuator pump means and said drive means for discharging fluid away from said drive means,

a control valve line connected between said actuator pump means and said drive means in said supply and discharge lines,

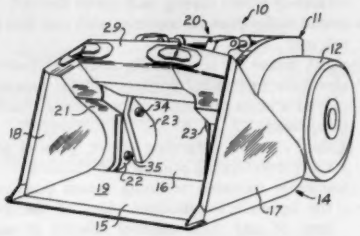
a by-pass line connected between said supply line and said discharge line at a location between said control valve and said drive means for permitting a portion of fluid supplied toward said drive means by said actuator pump means through said supply line to flow directly to said discharge line whereby said drive means is actuated smoothly by a remaining portion of the fluid supplied toward said drive means by said actuator pump means, a variable throttle valve in said by-pass line for varying the portion of fluid flowing therethrough, the work vehicle having a further drive means for actuating a further function thereof, said actuator pump means connected to said further drive means, a further control valve connected between said actuator pump means and said further drive means for controlling said further drive means, said further control valve being connected to said variable throttle valve for varying the flow through said by-pass line in accordance with the control of said further control valve on said further drive means whereby a reduced flow of fluid through said by-pass line is effected to increase the fluid flow to said drive means when said further drive means is activated by said further control valve.

4,134,506

MATERIAL HANDLING MEANS FOR USE IN EARTHWORKING MACHINES

Gerald P. Simmons, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1977, Ser. No. 859,365
Int. Cl.[2] E02F *3/81*
U.S. Cl. 214—140 **10 Claims**



1. In an earthworking machine having a frame, and wheels carried by the frame for permitting movement of the machine on subjacent terrain, said wheels including a pair of front wheels at opposite sides of a front portion of the frame, improved material handling means comprising:

a bucket having a front wall and a rear wall defining a plurality of rearwardly opening recesses, said rear wall having a lower portion of substantially constant curvature across the entire width of the bucket; and

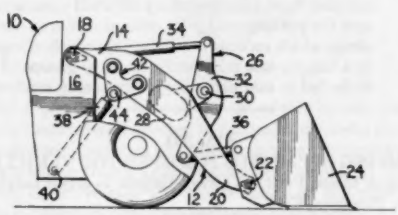
arm means movably connecting the bucket to the vehicle frame, said recesses and arm means being cooperatively arranged to permit said recesses to have at least a substantial portion of said arm means received therein in a retracted disposition of the bucket in the machine, at least a portion of said recesses being arranged to receive a portion of said front wheels in said retracted disposition of the bucket, said rear wall lower portion being rockable on the subjacent ground between a forwardly opening loading position and said retracted position.

4,134,507

FLEXING BEAM ASSEMBLY

Richard J. Piercy, Batavia, and Neal L. Woessner, Montgomery, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 23, 1977, Ser. No. 809,342
Int. Cl.[2] E02F *3/80*
U.S. Cl. 214—145 R **10 Claims**



1. A flexing beam assembly comprising:

an elongated beam having a construction sufficient for bending under preselected loads and defining a neutral plane of zero stress therethrough;

a bracket having first and second ends, a round opening through said first end, and a load-bearing connecting joint formed at said second end; and

a weld joint extending substantially around the periphery of said round opening, overlapping said neutral plane, and

securing the bracket to the beam, said second end of the bracket extending outwardly beyond the beam.

4,134,508

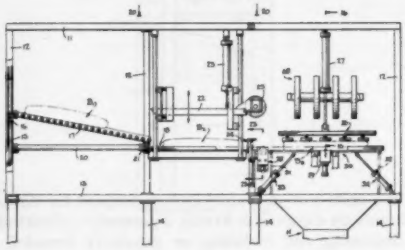
OPENING AND EMPTYING OF BAGS FILLED WITH BULK MATERIALS

Harry W. Burdett, Jr., Glen Rock, N.J., assignor to Harry W. Burdett, Jr. Associates, Fair Lawn, N.J.

Continuation of Ser. No. 722,059, Sep. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 532,704, Dec. 13, 1974, abandoned. This application Mar. 17, 1978, Ser. No. 887,715

Int. Cl.[2] B65G *65/04*

U.S. Cl. 214—152 **19 Claims**



1. A method of opening and emptying a bag substantially filled with substantially non-combustible particulate material comprising momentarily contacting a wall of the bag at each of the elemental areas continuously along a proposed line of cut therethrough using a dull cutting edge heated to a temperature above the kindling or melting temperature of the material of which said bag wall is made, said cutting edge being pressed against said elemental areas of the bag wall using said particulate material therein as a backing and minimal relative horizontal motion between said cutting edge and each of said elemental areas during said momentary contact, thereby to form a cut through only said bag wall by a combination of heat and pressure, and emptying said cut open bag of said particulate material.

4,134,509

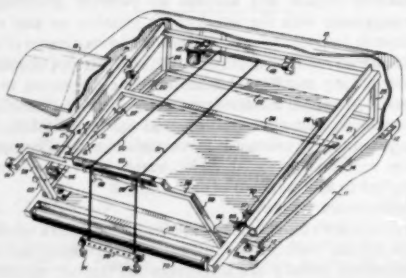
VEHICLE TOP LOADER MECHANISM

Clyde H. Clement, 8439 N. 13th Pl., Phoenix, Ariz. 85020

Filed May 27, 1977, Ser. No. 801,025

Int. Cl.[2] B60R *9/00*

U.S. Cl. 214—450 **5 Claims**



1. A loader adapted to be mounted on the top of a motor vehicle for raising objects from alongside the vehicle to its top and for lowering objects from the top of the vehicle to the ground alongside the vehicle, the loader including in combination:

frame means for supporting objects and having a fixed portion and an extendible portion movable from a non-extended position to an extended position to

extend outwardly from the loader to a position above a location on the ground alongside a vehicle when the loader is mounted on the top of a motor vehicle;

first means attachable to objects for lowering and raising such objects from the loader;

control means connected to said first means and the extendible portion of said frame means for operating said first means and the extendible portion of said frame means in synchronism with one another to load objects into the loader and unload objects from the loader;

second means attached to the extendible portion of said frame means for lifting objects from said frame means to position such objects for lowering and raising such objects from the loader; and

said second means comprising a generally U-shaped lifting member, the open end of which is pivotally mounted to the extendible portion of said frame means adjacent its outer extremity and further including spring biasing means for pivoting

upwardly the closed end of said lifting member from a closed position substantially parallel to the plane of said frame means to an extended position above the plane of said frame means.

4,134,510

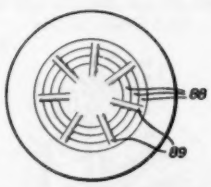
BOTTLE HAVING RIBBED BOTTOM

Long F. Chang, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 587,011, Jun. 16, 1975, Pat. No. 4,036,926. This application Feb. 9, 1977, Ser. No. 767,232

Int. Cl.[2] B65D *7/44, 23/00*

U.S. Cl. 215—1 C **4 Claims**



1. In a bottle for the retention of fluids under pressure, having a side wall surmounted by a dispensing opening, a generally concave bottom comprising:

an outer conical tapered wall and an inner arcuate concave wall lying at an acute angle relative to said outer wall, said walls being jointed by an arcuate support ring, a plurality of concentric annular strengthening ribs formed in said inner wall at the exterior thereof, and a plurality of additional radial ribs also formed in said inner wall, said radial ribs intersecting said annular ribs and projecting inwardly therebeyond to additionally strengthen the inner wall interiorly of said annular ribs.

4,134,511

CONTAINER WITH FRANGIBLE SEAL

Werner Deussen, Eltville, Germany, assignor to Stella KG Werner Deussen, Walluf, Germany

Filed Aug. 4, 1977, Ser. No. 821,969

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1976, 2653993

Int. Cl.[2] B65D *17/24*

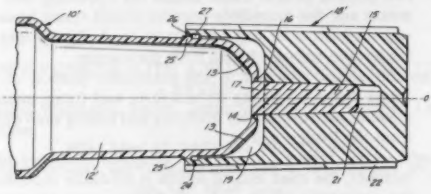
U.S. Cl. 215—32 **8 Claims**

1. A nonrefillable container for dispensable products to be stored under sterile conditions, comprising:

a sealed hollow body having an extremity centered on an axis with an end wall and a solid axially extending projection on said end wall integrally connected therewith via a

frangible link whose rupture creates an outlet for the contents of said body; and

a protective cap surrounding said extremity in close contact therewith, said cap having a bottom separated by an axial clearance from said end wall and formed with a socket receiving said projection in mating engagement therewith, said cap being inseparable from said body without rupture of said link, said cap and said extremity being provided



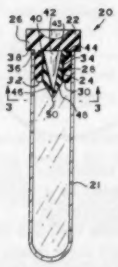
with mutually complementary annular formations axially offset from each other and interengageable with a snap fit upon a repositioning of said cap on said extremity after a separation therefrom and detachment of said projection to permit a partial discharge of said contents by way of said outlet, said bottom coming to rest against said end wall and forming a seal around said outlet upon interengagement of said formations.

4,134,512

ONE-WAY EVACUATED TUBE STOPPER

Edward L. Nugent, N. Caldwell, N.J., assignor to Becton, Dickinson and Company, East Rutherford, N.J.

Filed Jun. 8, 1977, Ser. No. 804,502
Int. Cl.[2] B65D *51/00*; A61B *5/14*
U.S. Cl. 215—247 **16 Claims**



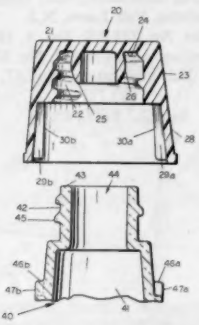
1. A stopper adapted for removable mounting in an evacuated tube having an open end for collecting blood samples, the stopper comprising; a plug adapted to be mounted in the open end of an evacuated tube so as to normally seal the open end of the tube, the plug having means thereon puncturable by a sample needle to permit access of a blood sample needle therethrough into fluid communication with the evacuated interior of the tube so that blood is collected in the tube from the needle, a normally closed check valve on the plug capable of automatically opening when the needle is inserted through the plug and is subjected to the reduced pressure in the tube and automatically closing when subjected to a predetermined amount of pressure from within the tube such as that caused by backflow thereby preventing any fluid passing into the needle from the tube, the check valve having surfaces thereon cooperating with surfaces on the plug to form a sealed interior chamber therebetween when the valve is closed, and the chamber being positioned to be capable of housing the end of the needle when the needle is inserted through the plug to thereby facilitate operation of the valve in controlling flow into and out of the needle.

4,134,513

CHILD-RESISTANT SAFETY CLOSURE

George V. Mumford, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 29, 1977, Ser. No. 811,409
Int. Cl.[2] B65D *55/02, 85/56*; A61J *1/00*
U.S. Cl. 215—216 **17 Claims**



1. In a child-resistant safety closure adapted for threadable attachment on a container having a generally cylindrical hollow dispensing end including an exteriorly threaded neck portion and defining a smooth axially extending peripherally continuous exterior sealing surface disposed between the threaded portion and an annular rim defining a dispensing opening, and an interlocking member orientationally arranged to interlock said closure on said dispensing end when said closure is threadably advanced to a fully closed position on said neck portion, said closure comprising:

a closed endwall, an integral depending first sidewall section and second sidewall section projecting axially beyond said first sidewall section, said first sidewall section defining a threaded interior surface portion threadably engageable with the threaded neck portion of said container to accommodate threaded advancement of said closure on said neck portion to a fully closed position, said second sidewall section having a generally circular cross-sectional configuration and being sufficiently flexible to deform from said generally circular cross-sectional configuration to a generally elliptical cross-sectional configuration in response to manual compression of diametrically opposite sides thereof and being sufficiently resilient to essentially resume said generally circular cross-sectional configuration promptly upon release of said manual compression;

an interlocking member integrally formed on said second sidewall section and adapted to override interlocking engagement with the interlocking member on said container in response to normal threaded advancement of said closure on said neck portion, but to intercept the latter interlocking member in interlocking engagement in response to normal threaded retrogressive movement of said closure on said neck portion, and said interlocking engagement being releasable in response to manual compression and concurrent threaded retrogressive movement applied to said sidewall of said closure;

the improvement wherein

said first sidewall section of said closure includes a continuous annular sealing bead of flexible and resilient material projecting radially inwardly from the interior surface of said first sidewall section between said closed endwall and said threaded interior surface portion, said sealing bead being adapted to contact said exterior sealing surface on said neck portion in fluid-tight sealing relationship when said closure is in said fully closed position and to maintain continuous fluid-tight frictionally slidable sealing relationship therewith when said closure is threadably rotated to

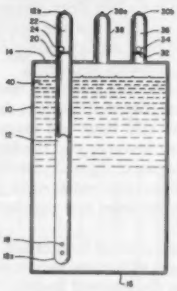
a location substantially displaced from said fully closed position.

4,134,514

LIQUID SOURCE MATERIAL CONTAINER AND METHOD OF USE FOR SEMICONDUCTOR DEVICE MANUFACTURING

John C. Schumacher, and Andre Lagendijk, both of Oceanside, Calif., assignors to J C Schumacher Co., Oceanside, Calif.

Filed Dec. 2, 1976, Ser. No. 746,923
Int. Cl.[2] B65D *17/00, 25/00*
U.S. Cl. 220—85 S **5 Claims**



1. A container for material which is not to be exposed to atmosphere comprising:
walls defining a sealed chamber;
a tube for access to the chamber connected to one of the chamber walls;
wall means extending across said tube providing an inner seal allowing access to said chamber only upon being ruptured;
means extending across said tube spaced outwardly from said inner seal to form an outer seal to prevent any manual access to said inner seal without first rupturing said outer seal;
a liquid material contained within said chamber and maintained exclusively on one side of said inner seal, the space between said seals being devoid of liquid; and
said outer seal being sufficiently strong to comply with safety regulations concerning the shipment of said material, and said inner seal being readily breakable so that it may be broken without manual access to the interior of the tube after the outer seal has been broken and a connection has been made to the tube for using the material, said container and seals being made of a material which is highly inert with respect to the material in the container.

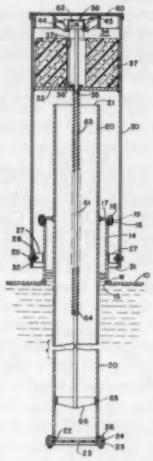
4,134,515

EMERGENCY ROOF DRAIN FOR FLOATING ROOF STORAGE TANKS

Richard E. Hills, Coraopolis, and Derek K. Neely, Pittsburgh, both of Pa., assignors to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.

Filed Nov. 1, 1977, Ser. No. 847,577
Int. Cl.[2] B65D *51/16, 87/18*
U.S. Cl. 220—219 **19 Claims**

1. An emergency roof drain for floating roof storage tank, comprising: a siphon attached to a floating roof for drawing water off of a floating roof, said siphon having an inlet end spaced from and disposed above the upper surface of the roof so that water on the roof moves upwardly from the roof into said siphon through said siphon inlet, and an outlet end disposed within the tank beneath the level of a liquid stored in the tank and spaced from and below the roof; a normally closed valve means in the outlet end of the siphon, said valve means being located beneath the roof and normally closing said outlet end for normally preventing flow through the siphon; and valve opening means located in said siphon to be associated with the valve means to open the valve means in response to a



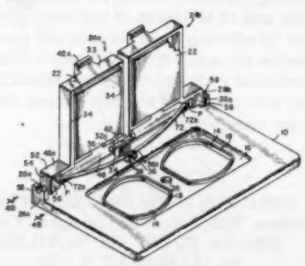
predetermined emergency water level on a roof with which the siphon is used, to thereby siphon water from the roof and thus prevent sinking of the roof.

4,134,516

WEATHERPROOF OUTLET BOX COVER

Kenneth J. Sullo, Wellesley, Mass., assignor to L. E. Mason Co., Boston, Mass.

Filed May 19, 1978, Ser. No. 907,543
Int. Cl.[2] H02G *3/14*
U.S. Cl. 220—242 **19 Claims**



1. A weatherproof outlet box cover comprising
A. a cover plate
B. means defining one or more apertures in the cover plate
C. closure means
D. means for hingedly mounting the closure means to the cover plate, said mounting means having a pivot axis and including
(1) one or more saddles formed on one of said cover plate and said closure means, said saddles all being collinear, and
(2) one or more curved surfaces formed on the other of said cover plate and said closure means, said curved surfaces being collinear and arranged and adapted to seat in said saddles so that said closure means can be swung between a closed position wherein it lies against the cover plate and covers an aperture therein to an open position wherein it is oriented at an angle relative to the cover plate and exposes an aperture therein.
E. a flexible resilient spring wire

F. means on the closure means for receiving the opposite ends of the spring wire at locations spaced from the pivot axis of the mounting means, and

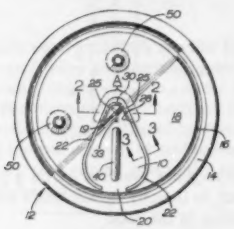
G. means on the cover plate for capturing a central portion of the spring wire so that said portion is deflected away from the pivot axis toward the cover plate whereupon the ends of the spring wire exert a torque on the closure means so as to bias the closure means toward its closed position.

4,134,517

EASY OPEN END

John S. Rhoades, Lafayette, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sep. 6, 1977, Ser. No. 830,970
Int. Cl.² B65D *41/32*
U.S. Cl. 220—268 **28 Claims**



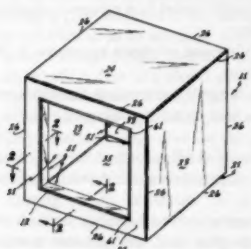
1. An easy open closure member for a container comprised of a panel means and a depressible tab provided with a hinge portion formed integrally with said panel means and a relatively stiff nose portion that includes a pressure relief notch means spaced from said hinge portion, said nose portion being severed from and selectively overlapped by said panel means, sealant patching material covering the underside of said panel means in the area of severance of said nose portion and said panel means for effecting a seal between said panel means and said depressible tab nose portion and means retaining the remaining peripheral portions of the tab intermediate the hinge portion and nose portion in a predetermined closed position relative to the panel means.

4,134,518

COLD BOX WITH BREAKER STRIP

Bernie Menchen, 7025 E. Slauson, Commerce, Calif. 90040

Filed Jan. 23, 1978, Ser. No. 871,436
Int. Cl.² B65D *25/18, 7/22*
U.S. Cl. 220—431 **4 Claims**



1. A cold box comprising:

an outer container;

an inner liner disposed within and spaced from said outer container;

said outer container and said inner liner each having an opening which are aligned with each other and substantially the same size and shape;

said outer container and said inner liner being made of a rigid sheet like material;

said opening on said outer container having disposed around its periphery an inwardly directed flange;

said opening on said inner liner having disposed around its periphery an outwardly directed flange so that it is coplaner with said flange on said outer container;

a first channel disposed around and fixed to said flange on said outer container;

a second channel disposed around and fixed to said flange on said inner liner;

said first channel having a first deep groove formed along its length and disposed between the space formed by said container and said liner and extending beyond said flange on said container towards said liner;

said second channel having a second deep groove formed along its length and disposed between the space formed by said container and said liner and extending beyond said flange on said liner towards said container;

a breaker strip having an elongated plate and a pair of parallelly disposed flanges disposed at right angles to said plate and spaced inwardly from and parallel to both edges of said plate;

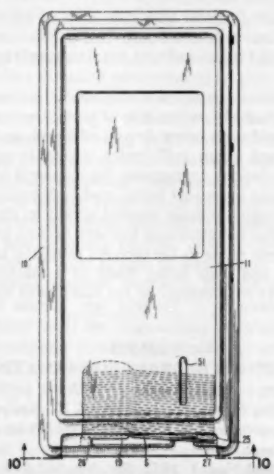
locking means on said parallel flanges and said deep grooves to cause said flanges to become secure within said grooves when said flanges are inserted therein.

4,134,519

DISPENSER FOR ELONGATE THIN FLEXIBLE ARTICLES

Burton Barnett, 12592 Martha Ann Dr., Rossmoor, Calif. 90720, and David Brody, 406 Drury La., Beverly Hills, Calif. 90058

Filed Oct. 21, 1977, Ser. No. 844,289
Int. Cl.² B65H *1/06*
U.S. Cl. 221—46 **4 Claims**



1. An article dispenser for elongate thin flexible articles comprising, a cartridge of stacked thin flexible articles, said cartridge having a bottom opening for access to the lowermost stacked article, a cartridge holder having a pivoted front door to be opened for positioning a cartridge within the holder, holding projections on the inside of the back wall of the holder to position a cartridge within the holder and with the article opening of the cartridge at the lower end of the holder and hold the cartridge in position when said door is closed, a step projection on one side at the bottom of the holder to incline the stack of articles at the bottom of the cartridge and holder when the holder is vertically positioned with the cartridge opening at

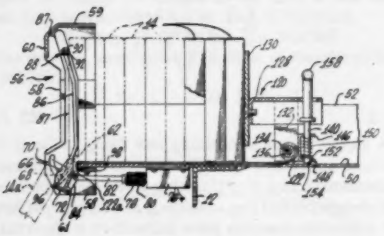
the lower end, and a bottom access opening in the holder shaped to normally retain the lowermost inclined article within the cartridge and holder and to permit manual access to enable a user to grip and bend the lowermost article whereby only the lowermost article may be bent to conform to the shape of the access opening and thereby be removed from the cartridge and cartridge holder.

4,134,520

ARTICLE DISPENSING MACHINE WITH SPRING-DRIVEN CARRIAGES FOR ADVANCING ARTICLES TO BE DISPENSED

Robert J. Collins, Venice; Richard R. Stutsman, North Hollywood, and Theodore C. Youngkin, Mount Baldy, all of Calif., assignors to Rod Pierce & Associates, Marina del Rey, Calif.

Filed Jan. 24, 1977, Ser. No. 762,113
Int. Cl.[2] B65G *35/04*
U.S. Cl. 221—129 **29 Claims**



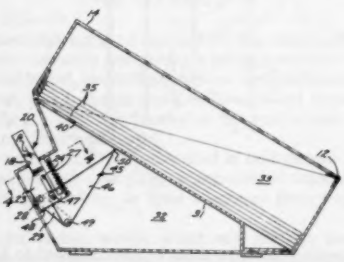
1. A dispensing machine comprising:
a frame forming at least one elongated substantially horizontal channel along which articles to be dispensed can be arranged in a row;
releasing means disposed at one end of said frame for releasing said articles sequentially upon actuation thereof;
carriage means movable along said channel for advancing said articles toward said releasing means; and
spring means for urging said carriage means toward said releasing means with a substantially constant spring force, said spring means comprising an elongated tape, concave in cross section, and oriented so that the longitudinal center axis thereof rests on the bottom of said trough when uncoiled and the longitudinal edges thereof stand away from the bottom of said trough, whereby said articles to be dispensed rest on said longitudinal edges.

4,134,521

NAPKIN DISPENSING MECHANISM

Adam Pecht, 11924 Gurley Ave., Downey, Calif. 90242

Filed May 2, 1977, Ser. No. 793,070
Int. Cl.[2] B65H *3/22*
U.S. Cl. 221—213 **3 Claims**



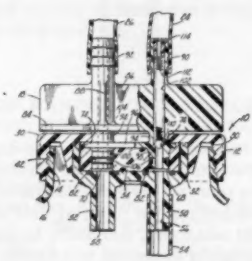
1. A napkin dispenser comprising:
a housing including an upper chamber and lower chamber, said upper chamber having a hinged access cover forming a slot at the free end thereof, said cover and said upper chamber being conformed in rectangular mating planform;
a plurality of paper napkins arranged in a stack and disposed on the interior of said upper chamber, the lowermost one of said napkins being aligned in a substantially planar alignment with said slot; and
a dispensing mechanism disposed on the interior of said lower chamber including a sliding actuator partly extending into said lower chamber from the exterior thereof, said sliding actuator having two substantially parallel surfaces joined at one end to form a forked structure receiving therebetween a bellcrank, each said surface further including an elongate slot disposed to receive a pivot for said bell crank the longitudinal alignment of said slots being common with the axis of sliding translation of said actuator, said bell crank disposed in the interior of said lower chamber and supported for pivotal motion around said pivot, said pivot extending to support said sliding actuator in translation, a connecting rod connected between said actuator and said bell crank for pivotally articulating said bell crank upon an inward translation of said actuator, said bell crank including a pin on the free end thereof arranged to extend into the interior of said upper chamber over a segment of said pivotal articulation of said bell crank for engaging said lowermost one of said napkins, and for dispensing said lowermost napkin out of said housing through said slot.

4,134,522

CAP ASSEMBLY AND LOCK FOR AQUEOUS AMMONIA CONTAINER

Robert C. Patzke, Prospect Heights, and Thomas V. DeRyke, Libertyville, both of Ill., assignors to Addressograph-Multigraph Corporation, Los Angeles, Calif.

Filed Jan. 5, 1977, Ser. No. 756,783
Int. Cl.[2] B67D *5/32*
U.S. Cl. 222—153 **3 Claims**



1. A cap assembly for use with a container for storing and supplying a volatile developer liquid to a developer system of a copying machine, comprising:
a closure member of integral construction releasably mounted on a dispensing opening of the container and comprising an upper lid, a lower body and a seal means;
a feed outlet on the lower body for passage of the developer liquid from the container to the developer system;
vent means provided in the lower body for venting the container in response to pressure build-up of the the developer liquid in the container;
a drain outlet on the lower body for passage of the developer liquid to the container from the developer system;
said seal means rotatably supported by the lower body for actuation between a first position for closing the feed outlet to prevent passage of the developer liquid from the container and a liquid supply position for opening the feed outlet to permit passage of the developer liquid from the container, said seal means including aperture means posi-

tionable into alignment with the feed and the drain outlets in response to actuation of the seal means to the liquid supply position, and positionable out of alignment with the feed and the drain outlets in response to actuation of the seal means to the first position;

key means including opening means in alignment with the aperture means, said key means being releasably engageable with the upper lid for selectively actuating the seal means between the first and the liquid supply position;

means for locking the key means against actuation when the seal means is in the liquid supply position to prevent inadvertent actuation of the key means and interference with the liquid supply from the container to the developer system; and

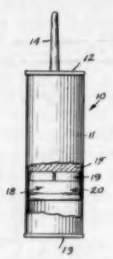
means for selectively actuating the lock means to permit actuation of the key means when the seal means is in the liquid supply position.

4,134,523

VENTED PISTON FOR BARRIER PRESSURE CONTAINERS

Harold M. Hansen, Westfield, and Edward J. Towns, Convent Station, both of N.J., assignors to Southern Can Company, Tuckahoe, N.Y.

Filed May 9, 1977, Ser. No. 795,455
Int. Cl.[2] B67D *5/54*
U.S. Cl. 222—389 **6 Claims**



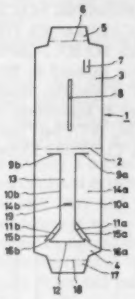
6. In a barrier pressure container having a dispensing valve at one end and a piston separating the container into a first compartment for receiving a viscous material to be dispensed and a second compartment for receiving fluid under pressure, the improvement comprising, said piston having a semi-rigid head portion integrally connected to a flexible skirt portion, said head portion including an exterior side wall, said exterior side wall and said skirt portion slidably engaging the inner periphery of the container, an inwardly dished end wall connected to said exterior side wall, cup means located generally axially of said piston, said cup means including an inner generally cylindrical side wall located substantially concentrically of said exterior side wall, an imperforate bottom wall connected to said inner side wall, a plurality of slots providing communication between said inner and outer side walls, each of said slots being generally U-shaped in cross-section and having a lower wall located substantially in the same plane as said bottom wall, said lower wall of each slot terminating adjacent to the connection between said head portion and said skirt portion so that free air trapped within said first compartment between the viscous material and said head portion is forced through said slots and past said flexible skirt portion into said second compartment when relative movement occurs between said piston and the viscous material, whereby substantially all free air is exhausted from said first compartment.

4,134,524

PACKING MEANS FOR COLLARED CLOTHES AND METHOD

Akiko Nakano, and Hisako Nakano, both of Yokohama, Japan, assignors to Nakano Shokai, Ltd., Yokohama, Japan

Filed Nov. 15, 1977, Ser. No. 851,639
Claims priority, application Japan, Nov. 15, 1976, 51/136272
Int. Cl.[2] A41H *5/00*; A11H *33/00*
U.S. Cl. 223—71 **21 Claims**



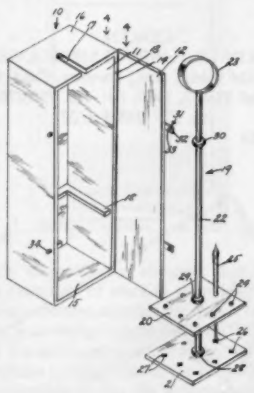
1. A support sheet for folding and fixing collared clothes, comprising upper and lower halves which are adapted to be laid substantially one over the other when said support sheet is folded along a central line of folding, said upper half having an upper end collar-insertion piece adapted to be inserted to the back side of a collar of said clothes, while said lower half is provided with a bottom turn-up piece pivotally connected at one end to said lower half adjacent said central line of folding and centrally positioned on said lower half, an end opposite said pivotally connected end being adapted for turning the bottom section of clothes up around, and two body folding sections formed adjacent to and at both sides of said bottom turn-up piece, around which both side portions of the body section are to be folded.

4,134,525

TRAVELING CASE FOR ARTIST BRUSHES

Patricia M. Respoli, 1315 Pentaquit Ave., Bayshore, N.Y. 11706

Filed Nov. 7, 1977, Ser. No. 848,866
Int. Cl.[2] A45C *11/00*; B65D *9/00*
U.S. Cl. 224—46 R **8 Claims**



1. A traveling case for artist brushes adapted to hold each brush firmly in a separable, readily accessible, upright position comprising an elongated rectangular housing having three vertical walls perpendicular to each other and provided with a

hinged elongated rectangular door having suitable closure means, a slotted top wall having a partial slot extending about halfway from its free edge, and an internal horizontal U-shaped rib guide disposed on said vertical walls; and a separable, self-supporting, two-tier brush holder insertable under said U-shaped rib within said container, said holder being retained in a stationery position by the coaction of said brush holder and said rib, said brush holder comprising two parallel horizontal tiers, an upper tier provided with several openings, each to receive single brushes, and a lower tier provided with gripping means to hold brush handles firmly, and interconnected by a centrally located vertical rod adapted to be slidably received by said slotted top wall, said rod extending above said top wall and terminating in a carrying means which is continuously accessible during and after its insertion into said housing.

4,134,526

FILM STRIP JOINT FOR CONTINUOUS PROJECTION

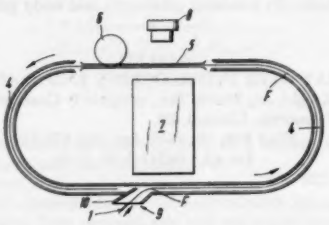
Klaus Weisser, Garmisch-Partenkirchen, Fed. Rep. of Germany, assignor to Söding TV GmbH & Co., Bild & Ton International, Lockham b. Munich, Fed. Rep. of Germany

Filed Sep. 16, 1977, Ser. No. 833,744

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1976, 2642406

Int. Cl.² G03B *1/56*

U.S. Cl. 226—91 **6 Claims**



1. A joint for connecting the ends of an elongated perforated film strip into a closed loop which is movable along an annular closed guide path by a conveying means, said joint being characterized in that on the one end of the film strip, corresponding in length substantially to that of said guide path, a follower is secured which projects substantially vertically from the plane of said film, and in that at the other end of said film strip a lock-in aperture is formed for the purpose of allowing free motion engagement of said follower with said aperture.

4,134,527

POWDER CHARGE OPERATED APPARATUS

Pierre Termet, Lyon, France, assignor to Societe de Prospection et d'Inventions Techniques Spit, Bourg-les-Valence, France

Filed May 2, 1977, Ser. No. 792,605

Claims priority, application France, May 6, 1976, 76 13552

Int. Cl.² B25C *1/14*

U.S. Cl. 227—10 **2 Claims**

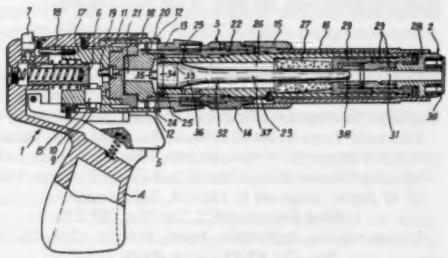
1. A cartridge-actuated fastener driving tool including:

a slidable assembly comprising a barrel, a muzzle at one end of said barrel, a cartridge chamber at the other end of said barrel, and a breech-block and percussion means for exploding a cartridge located at the end of said chamber remote from said barrel,

a driving piston slidably mounted in said slidable assembly for actuation by the gases produced by an explosion in said cartridge chamber to eject a fastener from said muzzle, and

a tubular casing, within which said slidable assembly is mounted for axial sliding movement, and having a handle with a trigger mounted on the casing near one end thereof,

said driving piston comprising a head portion and a shank portion, said shank portion having at least at its forward end a frusto-conical abutting surface formed thereon for engaging a corresponding frusto-conical abutting surface formed on said slidable assembly for retaining a substantial



part of said driving piston therein in case of breakage of said piston, said frusto-conical surfaces having a conicity of less than 3%.

4,134,528

METHOD OF PRODUCING COPPER CLAD STEEL WIRE

Werner Bährе, Burgdorf; Karl H. Stobäus, Hanover, and Gerhard Ziemek, Langenhagen, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshuette, Germany

Filed Dec. 12, 1977, Ser. No. 859,802

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727186

Int. Cl.² B23K *28/02*; B21D *39/04*

U.S. Cl. 228—115 **5 Claims**

1. A method of producing copper-clad steel wire, comprising:

providing a copper tube around a steel wire, said tube having an inside diameter larger than the outside diameter of the steel wire;

reducing the cross section in the cold state by at least 30% followed by annealing at at least 800° C. for at least 3 hours, slow cooling and reduction in cross-section in the cold state by at least 10%.

4,134,529

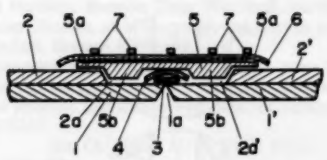
METHOD OF JOINING COATED LARGE-DIAMETER STEEL PIPES LAID UNDERGROUND

Atsushi Hara, Tokyo; Tatsuaki Takeuchi, and Jun-ichi Ogata, both of Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 21, 1977, Ser. No. 779,601

Int. Cl.² B21D *39/04*

U.S. Cl. 228—175 **10 Claims**



1. A method of joining coated large-diameter steel pipes laid underground by internally welding the groove of the steel pipes, said method comprising the steps of applying a layer of heat insulating material to an outer surface of the welding part of the pipes; covering the ends of pipe coating, uncoated portions of the pipe ends and the heat insulating layer with a layer of heat fusible, heat adhesive, corrosion resisting material of a shape corresponding to the external shape of the pipes; binding the outer surface of the corrosion resisting material layer with

a thin clamp plate; and then welding the steel pipes thereby thermally fusing the corrosion resisting material layer and the ends of the pipe coating and causing the thermally fused corrosion resisting material to adhere to the uncoated portion on the pipes and unite with the ends of the pipe coating.

4,134,530

METHOD FOR CONSTRUCTION OF WATER INTAKE PORTION OF HYDRAULIC MACHINE

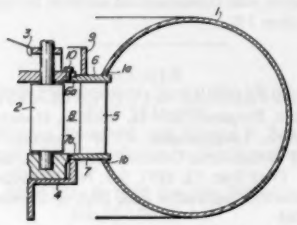
Kagehiko Yamamoto; Hideo Ito; Mizuho Tanaka; Shoji Sato; Hidetoshi Togashi, all of Hitachi; Isao Yanagida, Juomachi; Yukio Yamaguchi; Mutsuo Suzuki, Hitachi; Tadakazu Oguri, Hitachi; Hisanao Kita, Hitachi, and Junzo Komatsu, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 11, 1976, Ser. No. 657,272

Claims priority, application Japan, Feb. 14, 1975, 50-17811

Int. Cl.[2] F10D *25/24;* B23K *31/02*

U.S. Cl. 228—182 **2 Claims**



1. In a method for fabricating a water guide portion of a hydraulic machine on site, said portion including a casing and a speed ring having a flat annular member fixed relative to at least one opening of said casing, the improvement comprising the steps of welding a non-supportive annular rib member on one surface of said annular member at a position selected in such a manner that the moment of forces acting on the flat annular member about the center of gravity of the cross-section of the flat annular member and the rib is substantially zero and welding said casing to said speed ring with an edge of said opening of said casing being arranged between said rib member and outer periphery of said annular member.

4,134,531

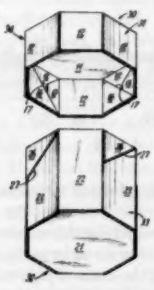
SELF LOCKING OCTAGONAL BOX

David J. Martinez, Chicago, and Joseph F. Schillinger, Palos Hills, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Feb. 6, 1978, Ser. No. 875,418

Int. Cl.[2] B65D *5/12*

U.S. Cl. 229—23 BT **15 Claims**



1. A self locking paperboard container comprising:

a tubular body portion having a sidewall including a plurality of upstanding panel members and a planar base portion, said body portion including a plurality of locking flaps disposed on alternate upstanding panel members on the outer faces thereof, each of said locking flaps extending from the free edge of its respective panel member to an intermediate portion thereof, each of said locking flaps including a camming surface; and

a cap member having a sidewall including a plurality of upstanding panel members and a planar cover portion said cover portion being slightly larger in plan area than the base portion, said cap member panel members corresponding in width and number to the panel members of said body portion, said cap member further including a plurality of locking flaps disposed on alternate cap member panel members on the inner faces of said cap member panel members, each of said cap member locking flaps extending from the free edge of its respective cap member panel to an intermediate portion thereof, said cap member locking flaps each having a camming surface such that when the cap member is placed on said body portion with the locking flaps of the cap member opposing the locking flaps of the body portion the camming surfaces of said opposed locking flaps engage each other and inhibit removal of the cap member from the body portion, there being a sufficient number of panel members in said body portion and cap member, and the fit between said body portion and cap member being such that said cap member is resistively rotatable relative to said body portion.

4,134,532

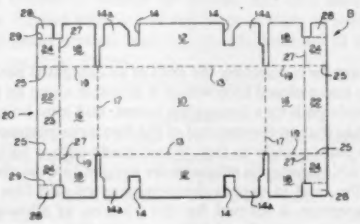
TRAY WITH INTERLOCKING END FLANGES

Onis A. Knight, Jr., Hurst, Tex., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 10, 1978, Ser. No. 876,522

Int. Cl.[2] B65D *5/26, 5/22*

U.S. Cl. 229—32 **2 Claims**



1. In a one piece, open top, tray type container, having a bottom wall and opposed pairs of side and end walls foldably joined to and upstanding from opposed side and end edges, respectively, of said bottom wall, integral means for interlockingly connecting said end walls to said side walls at the corners of said container without requiring outside securing means, comprising;

(a) each of said side walls including a pair of generally vertically extending slots spaced inboardly from the ends thereof between a center portion of the side wall and a pair of end portions thereof;

(b) corner flaps foldably joined to opposed side edges of said end walls and folded normal thereto so as to lie against inner faces of respective side walls;

(c) connecting flange members at opposed ends of the container each including:

(i) a center element foldably joined at its upper edge to the upper edge of a related end wall and folded downwardly to lie against the outer face of said end wall;

(ii) a pair of side elements, each foldably joined at its upper edge to an upper edge of a related corner flap, foldably joined at its outboard edge to a related side edge of said center element, and folded downwardly to lie against the outside face of said related corner flap;

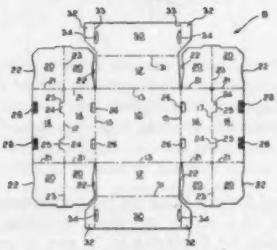
(iii) locking elements foldably joined to inboard edges of respective side elements and being folded to lie against inner faces thereof;

(iv) each of said locking elements being positioned within a related slot of an adjacent side wall and, together with the related end portion of said adjacent side wall, being interposed between a related corner flap and side element to provide an integral, interlocking connection between the side and end wall.

4,134,533
STACKABLE CONTAINER

William D. Heavner, Clovis, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 19, 1977, Ser. No. 861,878
Int. Cl.[2] B65D *5/22*
U.S. Cl. 229—34 R **5 Claims**



1. In a stackable container formed of a unitary blank of foldable paperboard, the combination of:

(a) a bottom wall;

(b) pairs of opposed side and end walls foldably joined to and upstanding from opposed side and end edges of said bottom wall;

(c) said end walls each including an outer panel joined at its lower edge to said bottom wall and an inner panel joined at its upper edge to the upper edge of said outer panel;

(d) said end walls having stacking tabs projecting upwardly therefrom adapted to be received within related recesses in the lower portion of a similar container to prevent lateral movement therebetween when containers are stacked;

(e) each of said recesses including an opening extending completely through an end wall outer panel and a depressed area of reduced thickness in the related end wall inner panel aligned with said opening;

(f) means for joining adjacent ends of side and end walls at the corners of the container.

4,134,534
CARTON WITH INTEGRAL CARRYING HANDLE

Raymond G. Scott, Oak Brook, and Lawrence S. Wysocki, Chicago, both of Ill., assignors to Champion International Corporation, Stamford, Conn.

Filed Feb. 13, 1978, Ser. No. 877,224
Int. Cl.[2] B65D *5/46*
U.S. Cl. 229—52 B **6 Claims**

1. A carton comprising:

opposed front and back walls joined by opposed side walls;

a bottom and top wall between said front and back walls, said top wall including at least two overlapping flaps, one of said flaps being hingedly connected to said front wall and the other of said flaps being hingedly connected to said back wall;

a handle element cut in each of said flaps, each of said handle elements including:

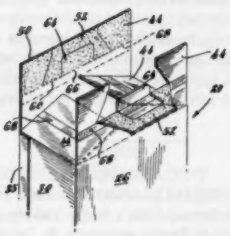
outer edges formed by spaced lines cut in each of said flaps extending inwardly from a top edge thereof;

a score line hinge extending towards each other from an end of each of said outer edges generally parallel to the top edge of the flap;

a central portion cut from the flap between said score line hinges, defining a lower edge on said handle element generally parallel to the top edge of said flap, said central portion of each of said handle elements being substantially rectangular in plan and cut along three edges, the intact edge of said central portion being between said score line hinges, said central portion of each handle element being overlapped and secured together, said central portion of each of said handle elements including:

a first tab substantially rectangular in plan and cut along three edges, the intact edge of said first tab being between said score line hinges,

a second tab substantially rectangular in plan and cut along three edges, the intact edge of said second tab being hingedly connected to the lower edge of said handle



element, such that upon securing said handle elements, together said second tab can be bent about its intact edge and the lower edge of the other handle element;

said carton further comprising:

a strip of reinforcing tape adhered to each of said flaps parallel to and just below the score line hinges of each handle element, said tape extending across the entire width of said flaps;

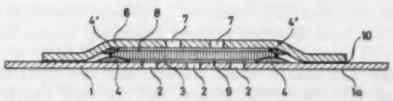
whereby one of said handle elements can be bent substantially 180° about its score line hinges when said flaps are overlapped, and the other of said handle elements complementally seated thereon; and

said complementally seated surfaces of said handle elements being secured together to form an integral handle on said top wall pivotable about said score line hinges from a substantially flat position on said top wall to a substantially upright position relative thereto so that said carton may be supported by said handle.

4,134,535
PRESSURE RELIEF VALVE FOR PACKING CONTAINERS

Manfred Barthels, Bremen; Peter Werkhoff, Varell, and Otto Vitzthum, Bremen, all of Germany, assignors to HAG Aktiengesellschaft, Bremen, Germany

Continuation-in-part of Ser. No. 800,735, May 26, 1977, abandoned. This application Feb. 10, 1978, Ser. No. 876,949
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625350
Int. Cl.[2] B65D *31/14*; F16K *9/00*
U.S. Cl. 229—62.5 **10 Claims**



1. A package for holding contents which emit gas while contained in said package, said package comprising walls

defining a container enclosure structure, one of said walls having gas outlet passage means extending therethrough, a valve unit carried on said one wall and in communication with the gas outlet passage means therein, and a covering member disposed over said valve unit and connected with said one wall, said covering member having at least one opening therein with said valve unit being operable to allow gas flow from the interior of said package through said passage means and outwardly through said covering member opening, said valve unit including a porous element impregnated with a relatively low volatility chemically stable liquid insensitive to oxygen, to provide a gas flow blocking layer of said liquid in the pores of said element, said porous element being in sealed fixed relationship around the periphery thereof with said package one wall and said covering member such that gas outflow from the gas outlet passage means through said opening can only occur through said porous element and not around it, the liquid having sufficiently high cohesivity or high surface tension and the porous element having sufficient pore size such that the presence of gas pressure in said container in excess of a predetermined value ruptures the liquid layer in the pores of said element whereby gas outflow occurs through said element, with the liquid layer in said pores restoring when the gas pressure in said container reduces to at least said predetermined value.

4,134,536

ELECTRONIC DATA PROCESSING EQUIPMENT

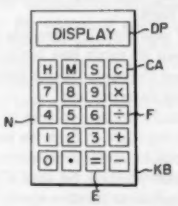
Seiji Saito, Yokohama; Ichiro Sado, Tokyo, and Reiji Hirano, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 1, 1977, Ser. No. 764,558

Claims priority, application Japan, Feb. 4, 1976, 51-11063; Feb. 4, 1976, 51-11064; Feb. 4, 1976, 51-11065; Feb. 4, 1976, 51-11066; Feb. 4, 1976, 51-11067; Feb. 4, 1976, 51-11068

Int. Cl.[2] G06F *5/00, 7/48*

U.S. Cl. 235—310 **18 Claims**



1. An electronic data processing device comprising:

input means for entering numerical data into storage means;

specifying means for specifying units of the numerical data entered by said input means;

identifying means for identifying sequential operations of said specifying means, said identifying means producing a first level of signal responsive to a first operation of said specifying means, and producing a second level of signal responsive to a second operation of said specifying means;

conversion means for converting a numerical data format of the data stored in said storage means to another data format; and

control means responsive to said signals from said identifying means for causing said conversion means to convert a first numerical data format of the entered numerical data having units specified by said specifying means, into a second numerical data format having a plurality of units when said control means receives said first level signal from said identifying means, and for said conversion means to reconvert said second numerical data format into said first numerical data format when said control means receives the second level of signal from said identifying means.

4,134,537

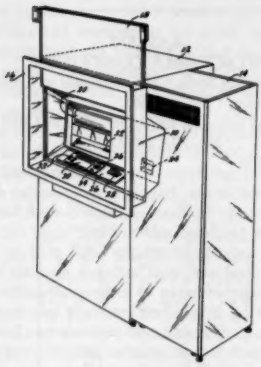
TRANSACTION TERMINAL

Paul F. Glaser, Culver City, and Richard J. Orford, Hermosa Beach, both of Calif., assignors to Transaction Technology, Inc., Los Angeles, Calif.

Filed Apr. 25, 1977, Ser. No. 790,764

Int. Cl.[2] G06F *15/30*; G07F *7/08*

U.S. Cl. 235—379 **74 Claims**



1. A terminal for providing for the performance of transactions by a user on a step by step basis, including,

a visual display for displaying to the user at specific steps in a transaction instructional text to the user for the performance by the user to advance the transaction on a step by step basis,

a plurality of function selectors located adjacent the visual display at a position corresponding to the location of particular instructional text on the visual display for selection in the successive steps of individual ones of the function selectors in the plurality to advance the transaction sequentially through the successive steps,

the visual display including at particular ones of the steps in transaction instructional text providing for a selection between individual ones of the function selectors in the plurality to advance the transaction to the next steps,

means coupled to the function selectors for enabling, at the particular ones of the steps, only the individual ones of the function selectors capable of being selected at such steps, and

means responsive to the selection, from the individual ones of the function selectors at each of the particular steps, of a particular one of such function selectors for providing for the performance of individual transaction in accordance with such selection.

4,134,538

PROCESS AND APPARATUS FOR IDENTIFICATION OF OBJECTS

Pierre Lagarde, Versailles, and André Elie, Paris, both of France, assignors to La Societe Metalimphy, Paris, France

Filed Mar. 16, 1977, Ser. No. 778,238

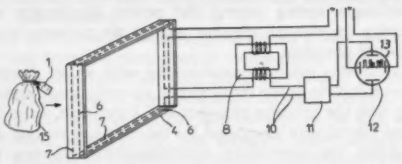
Claims priority, application France, Mar. 18, 1976, 76 07899; Aug. 19, 1976, 76 25182; Aug. 20, 1976, 76 25313; Oct. 11, 1976, 76 30519; Oct. 11, 1976, 76 30520

Int. Cl.[2] G06K *7/08*; G01S *9/56*; G08B *21/00*; G11B *25/04*

U.S. Cl. 235—449 **11 Claims**

1. In a process for identifying objects marked by a magnetic band or thin filament by detecting the passage of the magnetic band in a detection zone comprising at least one framework with an excitation coil fed with alternating current to produce an alternating magnetic field and a detecting coil balanced with the excitation coil such that no signal normally will appear in the absence of a magnetic body in proximity to the framework, the passage through or in proximity to the framework of an

object carrying a magnetic band producing for each alternation of the excitation field an unbalance in the detecting coil and the appearance of a signal fed to an apparatus for the detection and measurement in phase with respect to the excitation field, the improvement comprising forming a reference code for an object by selectively dividing the magnetic band at a variable predetermined location by cuts of variable predetermined extent, such that at the time of passage of the band proximate the detection zone signals of variable amplitudes also predetermined are produced, and decoding the signals in the detection apparatus by measurement of said amplitudes, the



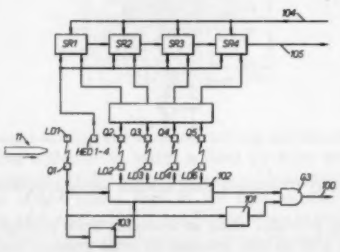
object being marked with a plurality of bands or thin magnetic filaments each having different hysteresis loops characterized by different coercive fields thus permitting assignment to each object of a reference code with as many characters as bands or filaments utilized and respectively assigning each character of the reference code to a band or filament in the order of the values of their respective coercive fields, the signal corresponding to each band appearing then in the detection apparatus in the same order of dephasing as the order of the coercive fields and each with amplitudes corresponding to the values assigned at the time of coding thereby reporducing the complete code in arrangement and amplitude.

4,134,539

CODE IDENTIFICATION APPARATUS

Dennis Hopkinson, Newport, Australia, assignor to Access Control Systems Pty Ltd., Australia

Filed Oct. 20, 1977, Ser. No. 843,833
Claims priority, application Australia, Nov. 24, 1976, PC8252
Int. Cl.[2] G06K *7/08, 13/06, 19/06*
U.S. Cl. 235—449 **10 Claims**



1. Code identification apparatus comprising a coded instrument having a set of code locations arranged in a line along the instrument and a code reader to which to apply the instrument, said reader comprising:

a body defining an instrument guideway along which to move the instrument with said line of code locations aligned with the direction of movement of the instrument;

code sensor means including a code sensor element mounted on the body such that said code locations of the instrument successively pass said sensor element as the instrument is moved along the guideway, which sensor means provides output signals indicative of code information at said code locations as those locations pass said sensor element;

signal storage means comprising a plurality of signal storage units at least equal in number to the number of code locations in said set;

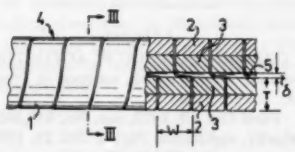
instrument position sensors comprising a first instrument position sensor adjacent the entrance of the guideway and a series of further instrument position sensors spaced along the guideway at the same spacing as said line of code locations of the instrument and each of said position sensors associated with one of said code storage units, said series of instrument position sensors providing in response to progress of said instrument along said guideway a succession of signals each causing connection of the associated storage unit to said code sensor element whereby to connect said storage units in succession to said code sensor element as said code locations of the instrument successively pass said code sensor element, said series of instrument position sensors being normally inactive and said first instrument position sensor adjacent the entrance of said guideway being responsive to entry of said instrument into said guideway to render the first of said series of instrument position sensors active, the remaining instrument position sensors of said series being rendered active sequentially each in response to generation of a signal by the immediately preceding instrument position sensor in said series.

4,134,540

BIMETALLIC ELEMENT

Gunnar H. Lagher, Fjälkinge, Sweden, assignor to Maj Agnes Andersson, Knypplerskevagen, Sweden

Filed Oct. 8, 1976, Ser. No. 730,867
Claims priority, application Sweden, Oct. 10, 1975, 75113753; Feb. 19, 1976, 76019207
Int. Cl.[2] G01K *5/64*
U.S. Cl. 236—34.5 **15 Claims**



1. A bimetallic element comprising a bimetallic strip including two bands of different metals joined to one another and helically wound to form an elongated body with one of the bands facing outwardly and the other of the bands facing inwardly, the strip being wound such that the free space defined by the inwardly facing band in the center of the elongated body has a diameter substantially smaller than the thickness of the bimetallic strip, giving the elongated body a wire-like shape.

4,134,541

FLUID SEPARATION DEVICE

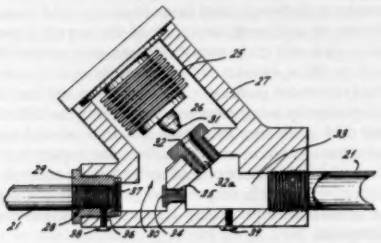
Robert E. Beatty, Narberth, Pa., assignor to Flexitallic Gasket Company Inc., Camden, N.J.

Filed Mar. 30, 1976, Ser. No. 672,070
Int. Cl.[2] F16T *1/10*
U.S. Cl. 236—56 **6 Claims**

4. In equipment for removing condensate or the like from a fluid system over a range of temperature conditions, the combination in a housing having an inlet connected to said fluid system; valve means downstream from the inlet, said valve means including a valve port for passing condensate loads received from said system, temperature responsive means including a thermally responsive element between the inlet and the port for opening and closing said port, said temperature responsive means being operative to open said port at low temperatures to pass any condensate existing in the inlet at said

low temperatures and to close said port at temperatures above a selected higher temperature, said housing having an orifice to form a parallel path around said port for continuous passing of condensate, said orifice providing a restriction which is relatively small with respect to the size of said port, said restriction being sized to prevent the accumulation of condensate upstream from the port when the port is closed at temperatures above said selected higher temperature.

6. A method of separation of condensate from vapor which comprises first diverting the condensate from the vapor in



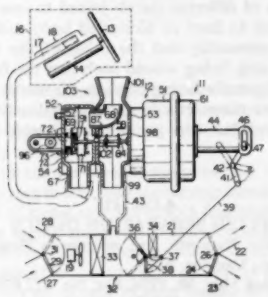
accordance with relative densities of the condensate and the vapor, thereafter continuously delivering the condensate through an orifice having a size limited to pass the flow of said condensate existing at the orifice at temperatures of said condensate within a first temperature range, sensing the temperature of said component upstream of the orifice an providing a parallel path for quantities of condensate not passed by said orifice in response to temperatures of said condensate at the upstream side of said orifice within a second temperature range.

4,134,542

THERMOPNEUMATIC ACTUATOR

Hiroyuki Sugiura, Konan, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Oct. 19, 1977, Ser. No. 843,545
Claims priority, application Japan, Oct. 21, 1976, 51-126443
Int. Cl.[2] B60H *1/02*
U.S. Cl. 236—13 **10 Claims**



1. In an air conditioning apparatus for a space including a duct opening into the space, means for forcing air through the duct into the space, air conditioning means for regulating a temperature of air passing through the duct and a control member for controlling the air conditioning means, a thermopneumatic actuator comprising:

a housing defining therein a pressure chamber, a valve chamber, a first temperature chamber communicating with the space and a second temperature chamber communicating with the duct;

a first diaphragm hermetically sealing the first temperature chamber from the valve chamber;

a second diaphragm hermetically sealing the second temperature chamber from the pressure chamber, the second diaphragm being equal in area to the first diaphragm;

aspirator means for inducing air flow from the space through the first temperature chamber.

means for inducing air flow from the duct through the second temperature chamber;

a power diaphragm constituting a wall of the pressure chamber, the control member being operatively connected to and positioned by the power diaphragm;

a diaphragm spring urging the power diaphragm and thereby the control member against air pressure in the pressure chamber;

a valve having inlets communicating with an air pressure source and the space respectively, an outlet communicating with the pressure chamber and a movable valve element operatively supported by the first and second diaphragms for controlling communication between the inlets and the outlet;

first and second thermally deformable springs disposed in the first and second temperature chambers respectively and being mechanically connected in parallel between the housing and the valve element; and

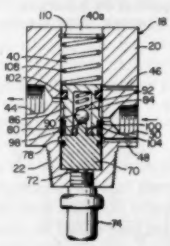
a valve spring connected between the valve element and the diaphragm in such a manner that a force of the valve spring opposes parallel forces of the first and second thermally deformable springs.

4,134,543

SNAP ACTION THERMALLY RESPONSIVE FLUID CONTROL VALVE

Wayne R. Duprez, West Newton, and George J. Briand, Winthrop, both of Mass., assignors to Standard-Thomson Corporation, Waltham, Mass.

Filed Dec. 16, 1976, Ser. No. 751,446
Int. Cl.[2] G05D *23/10*
U.S. Cl. 236—48 R **7 Claims**



1. Thermally responsive fluid control valve apparatus comprising:

a housing provided with an elongate main passage therewithin, with an inlet passage, an outlet passage, and a vent passage leading to the main passage,

a first movable valve member within the main passage,

a second movable valve member within the main passage,

the first and second movable valve members being relatively linearly movable within the main passage,

the first movable valve member being linearly movable to a position which provides communication between the inlet passage and the outlet passage, the first movable valve member being linearly movable to a position which closes communication between the outlet passage and the inlet passage, the second movable valve member being linearly movable to a position which closes communication between the vent passage and the main passage, the second movable valve member being linearly movable to a position in which communication between the main passage and the vent passage is open,

the first movable valve member having a cavity therein with an opening leading to the cavity, the opening providing communication from the cavity to a position between the first movable valve member and the second movable valve member, the second movable valve member having a protuberance extending into the cavity of the first movable valve member,

a closure member within the cavity of the first movable valve member and engageable with the protuberance and movable to close the opening in the cavity to close communication between the cavity and the position between the first movable valve member and the second movable valve member,

the first movable valve member having a flow passage leading from the main passage to the cavity therein, the first movable valve member being movable to a position in which there is communication between the inlet passage of the housing and the flow passage of the first movable valve member, the first movable valve member being movable to a position in which communication is closed between the inlet passage and the flow passage of the first movable valve member,

thermally responsive actuator means having a portion exterior of the housing and a portion within the main passage of the housing, the portion within the main passage being engageable with the second movable valve member for linear movement thereof.

4,134,544

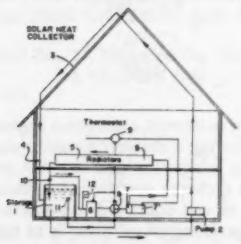
SOLAR HEATING SYSTEM

Harry E. Thomason, and Harry J. L. Thomason, Jr., both of 609 Cedar Ave., Fort Washington, Md. 20027

Continuation of Ser. No. 658,858, Feb. 18, 1976, abandoned. This application Aug. 9, 1977, Ser. No. 823,089

Int. Cl.[2] F24D *3/00*; F24J *3/02*

U.S. Cl. 237—1 A **5 Claims**



1. A solar heating and auxiliary heating system comprising a solar heat collector to warm a fluid by solar energy, heat storage means to store the solar-produced heat, means to circulate the solar-warmed fluid to the heat storage apparatus, auxiliary heat-producing means for use when stored solar heat is inadequate, a heat exchanger to warm a home or other space to be heated, circulating means to circulate fluid from the heat storage means to the heat exchanger and from the auxiliary heat-producing means to the same heat exchanger to add auxiliary heat to warm the space when heat from the heat storage means is inadequate, and means to switch the circulating means on to circulate warmed fluid from storage when some heat is needed and to switch it off when off is no longer needed, and to switch on the auxiliary heat-producing means and discontinue circulating warmed fluid from storage until the auxiliary heat-producing means meets the heating needs for the space, and to then switch off the auxiliary heat-producing means and to again circulate warmed fluid from storage to the heat exchanger, said means to switch including flow-directing valve means directing flow from storage to the heat exchanger and back to storage in a first mode of operation, or from the auxiliary heat-producing means to the heat exchanger and back to the auxiliary heat-producing means in a second mode of operation.

4,134,545

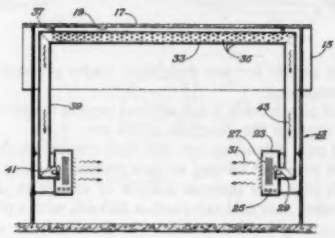
APPARATUS FOR RECIRCULATING HEATED AIR

Bobby J. Westbrook, Rte. 4, Waxiehachie, Tex. 75165

Filed Jun. 29, 1977, Ser. No. 811,377

Int. Cl.[2] F24D *5/04*

U.S. Cl. 237—53 **2 Claims**



1. In a room having a ceiling, an improved means for heating the room, comprising:

a pair of furnaces mounted opposing each other and on opposite ends of the room, each of the furnaces having a blower for discharging heated air into the room;

a collecting duct mounted adjacent the ceiling and extending substantially the length of the room, the collecting duct having a plurality of apertures for drawing air into the collecting duct;

a return duct connected to each end of the collecting duct and extending downward to the blower intake of each furnace, causing air that has risen into the collecting duct to be drawn down the return ducts and into the furnace to be discharged again.

4,134,546

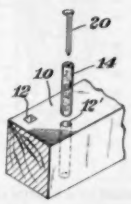
WOOD CROSSTIES WITH CELLULAR PLASTIC INSERTS

Lester J. Dankert, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1976, Ser. No. 748,986

Int. Cl.[2] E01B *9/16*

U.S. Cl. 238—370 **4 Claims**

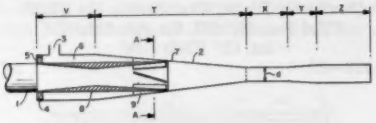


4. Method for restoring a spike-killed railroad crosstie incapable of holding a rail fastening device, which comprises the steps of boring a hole of a desired size into said crosstie, cleaning said hole, and introducing a generally elongate solid body of cellular plastic insert into said hole, said insert being of a size greater than that of said hole so as to cause a friction fit therebetween, so that said insert can hold said rail fastening device driven thereinto.

4,134,547
JET PIPE

Einar Gamst, Oslo, Norway, assignor to O. Ditlev-Simonsen, Jr., Oslo, Norway

Filed Dec. 14, 1976, Ser. No. 750,411
Int. Cl.² B05B 7/10
U.S. Cl. 239—404 9 Claims

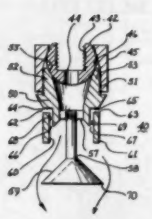


1. A jet nozzle for use with fluid under pressure, said jet nozzle comprising:
- an outlet pipe having a first conical section which uniformly converges in the direction of the jet;
- an inlet pipe extending into said first conical section of said outlet pipe and having an exit portion opening into said outlet pipe, the internal surface of said inlet pipe being provided, near said exit portion thereof, with a plurality of intersecting baffles which extend radially in planes inclined to the longitudinal axis of said inlet pipe;
- the smallest diameter of said first conical section being less than the inner diameter of the exit portion of said inlet pipe;
- said first conical section of said outlet pipe surrounding at least part of said inlet pipe and defining therewith an annular chamber into which compressed air is introduced;
- said annular chamber having a gradually reducing cross-section in the direction of the jet and terminating in a narrow annular opening between the conical inner wall of said first conical secton of said outlet pipe and said exit portion of said inlet pipe; and
- said outlet pipe also having a straight section forming a continuation of the smaller end of said first conical section, followed by a second conical portion diverging in the direction of said jet, and an outlet secton which is slightly converging in the direction of the jet.

4,134,548
SHOWER HEAD AERATOR

Richard C. Harmony, Tucson, Ariz., assignor to Harmony Emitter Company, Inc., Tucson, Ariz.

Division of Ser. No. 716,588, Aug. 23, 1976, Pat. No. 4,072,270.
This application Oct. 28, 1977, Ser. No. 846,589
Int. Cl.² E03C 1/084
U.S. Cl. 239—428.5 6 Claims



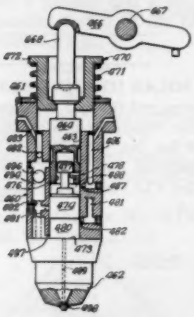
1. An aerator connected to a source of water under pressure for providing a mixture of water and air to an interior chamber of a water receiving and discharging device attached to said aerator, said aerator comprising in combination:
- a. a conduit for conveying water through said aerator from the source of water to the interior chamber of the device, said conduit including a water outlet for discharging the conveyed water and by such discharge creating a lower than ambient pressure environment in proximity to said water outlet; and
- b. a passageway disposed within said aerator and extending from an air inlet in the surface of said aerator to an air outlet located in proximity to said water outlet for conveying a flow of air through said air outlet into the interior chamber of the water receiving and discharging device in response to the lower than ambient air pressure environment proximate said water outlet;

whereby, both water and air are introduced to the interior chamber by said aerator and discharged from the device as a mixture of air and water.

4,134,549
INJECTORS OF A FUEL SUPPLY SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Julius P. Perr, Columbus, Ind., assignor to Cummins Engine Company, Inc., Columbus, Ind.

Division of Ser. No. 474,528, May 30, 1974, Pat. No. 3,951,117.
This application Mar. 15, 1976, Ser. No. 667,264
Int. Cl.² F02M 47/02
U.S. Cl. 239—92 5 Claims

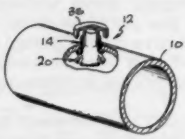


1. An injector for an internal combustion engine, comprising an injector body having a chamber formed therein, a timing piston reciprocably mounted in said chamber and separating said chamber into a charge portion and a timing portion, a plunger mounted in said body and movable in said timing portion, said plunger being reciprocable in an injection stroke and in a retraction stroke, a charge fuel supply passage formed in said body and adapted to connect a charge fuel supply to said charge portion for conducting charge fuel to said charge portion, said body including a nozzle connected to said charge portion for conducting said charge fuel from said charge portion to a cylinder of the engine, a timing fluid supply passage formed in said body and adapted to connect a timing fluid supply to said timing portion for conducting timing fluid to said timing portion, said timing fluid in said timing portion forming a hydraulic link between said plunger and said piston, and a spill port connected to said chamber adjacent said timing portion, said plunger when moved in said injection stroke causing said link and said piston to move and thereby force said charge fuel out of said charge portion and through said nozzle, and said spill port being located to be closed during said injection stroke but to be opened and thereby spill timing fluid in said timing portion at approximately the end of said injection stroke, said charge portion of said chamber including a ball passage having a ball movably mounted therein, one side of said ball passage being connected to said charge chamber and the other side of said ball passage being connected to a drain line, and means in said other side of said ball passage for limiting the extent of movement of said ball toward said drain line.

4,134,550
LIQUID FLOW CONTROL DEVICE

Elvin M. Bright, Sr., 17242 Bircher St., Granada Hills, Calif. 91344

Filed May 31, 1977, Ser. No. 801,458
Int. Cl.² B05B 1/30
U.S. Cl. 239—542 18 Claims



1. A pressure compensating emitter for a drip irrigation system comprising:

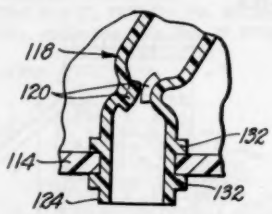
a valve seat member mountable in the wall of an irrigation conduit; and

a segmented cone valve registering within the valve seat member and including a stem portion extending outside the conduit wall and a cone portion interior to the valve seat member relative to the conduuit, the cone portion having circumferentially separated wall segments distortable inwardly in response to conduit internal pressure to penetrate within the valve seat member, the spaces between the separated wall segments defining apertures that decrease in width with greater penetration.

4,134,551
EMITTER FOR DRIP IRRIGATION

David G. Zeman, 10030 S. Greenleaf, Santa Fe Springs, Calif. 90670

Filed Sep. 13, 1976, Ser. No. 723,012
Int. Cl.² B05B 1/32
U.S. Cl. 239—542 2 Claims



1. In an emitter for use in drip irrigation having an elongated tubular member, formed of a flexible, resilient material which is capable of deforming in response to the force of water applied to the exterior of said member so as to restrict the flow of water through the interior of said member, the improvement which comprises:

internal means located within the interior of said tubular member for preventing said tubular member from deforming so as to completely close off the interior of said tubular member,

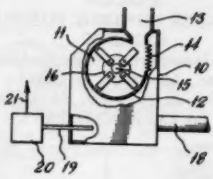
said internal means comprising a plurality of ribs located so as to be spaced from one another within the interior of said member for preventing opposed surfaces of said member from being deformed so as to come in contact with one another,

said tubular member is deformed intermediate its ends generally along a line extending transverse to said member so as to be capable of bending along said line in response to the force of water applied to the exterior of said member.

4,134,552
GRINDING MACHINES

Stewart P. T. Fraser, Upton-on-Severn, and Paul A. Fellowes-Freeman, Barnwood, both of England, assignors to Simon-Barron Limited, Gloucester, England

Filed Sep. 12, 1977, Ser. No. 832,465
Claims priority, application United Kingdom, Dec. 7, 1976, 50872/76
Int. Cl.² B02C 23/16
U.S. Cl. 241—33 8 Claims

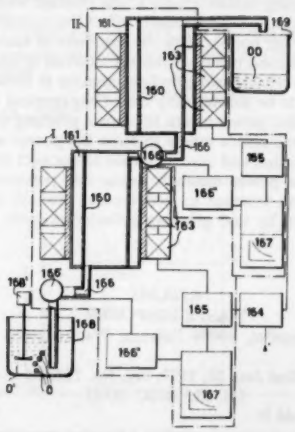


1. A grinding mill of the kind comprising a generally cylindrical grinding chamber defined by a screen having a shaft supporting a plurality of grinding hammers rotatable therein and being enclosed in a chamber to which suction is applied, and wherein the ground material passes through the screen entrained in an air stream into the surrounding enclosure, characterised by the provision of means for sensing the pressure within the enclosure surrounding the screen and actuating safety means in the event that the pressure falls below a predetermined value.

4,134,553
GRINDING APPARATUS

Eberhart Steinort; Armando Lazzari, and Alfredo Cartoceti, all of Malgesso, Italy, assignors to I.O.S. Industria Ossidi Sinterizzati S.r.l., Varese, Italy

Filed May 27, 1977, Ser. No. 801,314
Claims priority, application Italy, Nov. 2, 1976, 28931 A/76
Int. Cl.² B02C 17/06
U.S. Cl. 241—34 8 Claims



1. A grinding apparatus for grinding a working material by magnetically propelling a magnetic material into said work material, said apparatus comprising:

a container defining an interior grinding chamber having an

input and an output, said container being made of a non-magnetic material;

means for feeding the working and magnetic materials to the input of the grinding chamber at a variable feed rate;

means for generating a variable intensity and oscillating magnetic field within said container to cause relative movement between said working material and said magnetic material; and

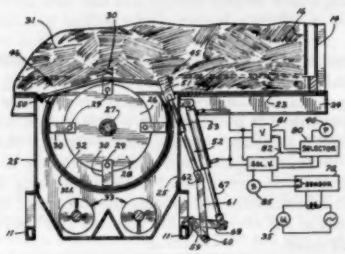
means for controlling the intensity of said magnetic field generated by said generating means and the feed rate of said feed means in accordance with a predetermined function to produce the working material with a preselected fineness at the output of the grinding chamber.

4,134,554

GRINDER CYLINDER CONTROL FOR WASTE PAPER GRINDER

Ruben D. Morlock, Jamestown, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Filed Oct. 26, 1976, Ser. No. 735,631
Int. Cl.[2] B02C *13/286*
U.S. Cl. 241—35 **6 Claims**



1. In a tub type grinder having a frame, a storage hopper having a grinding opening, a swinging hammer grinding cylinder mounted on said frame and positioned so the swinging hammers protrude through said grinding opening during operative grinding rotation of said grinding cylinder, a rotating tub member for moving material in the storage hopper across said opening, the improvement comprising grinding control means including a slatted grate member pivotally mounted adjacent one side of and overlying substantially the entire grinding opening and being movable from a first position wherein said grate member does not substantially affect the contact of material in said storage hopper with the hammers of said grinding cylinder, to a second position wherein material in said storage hopper and overlying said grinding opening is lifted by said grate member to be substantially out of engagement with said grinding cylinder, power means to control pivoting movement of said grate, and sensor means to sense the power utilized to rotate said cylinder, and control means to connect said sensor means and said power means to cause said power means to pivot said grate member to said second position when the power required by said grinding cylinder exceeds a desired level.

4,134,555

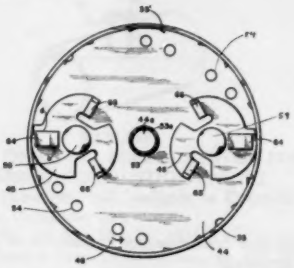
WASTE DISPOSER

Charles R. Rosselet, 14004 Palawan Way, Marina Del Rey, Calif. 90291

Filed Jan. 25, 1977, Ser. No. 762,456
Int. Cl.[2] B02C *18/42*
U.S. Cl. 241—46 B **15 Claims**

1. In a waste disposer including a housing providing a comminution chamber, an inlet in said housing for receiving waste material and fluid therein, shredding means within said comminution chamber, a rotary impeller assembly including a rotor and a plurality of impellers on said rotor within said comminution chamber, said impellers being adapted to cooperate with said shredding means upon rotation of said rotor for effecting comminution of said waste material, and drive means associated with said housing for selectively rotating said rotor, the improvement which comprises:

each of said impellers includes a base plate mounted for free rotation on said rotor, independent of the rotation of said rotor, each of said base plates including an upstanding main cutting blade having a plurality of cutting surfaces,



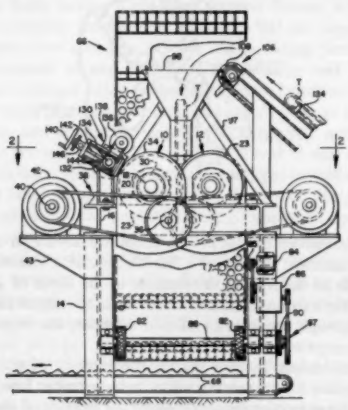
and at least one secondary cutting blade of a size less than said main cutting blade also having a plurality of cutting surfaces, the main cutting blade and at least one secondary cutting blade being mounted on one of said base plates in a mirror image relationship to the main cutting blade and at least one secondary cutting blade mounted on the other of said plates so that as said rotor rotates, said impellers upon contact with waste material will rotate in an opposite direction relative to said rotor.

4,134,556

TIRE SHREDDER

Stanley V. Ehrlich, and John T. Ehrlich, both of Portland, Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Continuation-in-part of Ser. No. 665,045, Mar. 8, 1976, Pat. No. 4,052,013. This application Sep. 19, 1977, Ser. No. 834,288
Int. Cl.[2] B02C *23/12*
U.S. Cl. 241—79.3 **19 Claims**



1. A shredding apparatus comprising:

a pair of side-by-side parallel and generally cylindrical shredding drums,

each said drum defining a series of axially spaced-apart cutting discs,

said drums being rotatably mounted with respect to one another such that upon rotation the discs of said opposed

drums coact to shred scrap material fed into the bight between said drums,

drive means for counterrotating said drums so that said drums have an infeed side and an outfeed side,

and a screening conveyor means for receiving shredded scrap pieces discharged from between said drums on said outfeed side and conveying large ones of said pieces to said infeed side for reshredding into smaller pieces while passing smaller pieces therethrough,

said screening conveyor means comprising a rotatable screening drum means encircling said shredding drums and drive means for rotating said screening drum means at a slow rate of speed whereby the effect of centrifugal force in retaining material on said screening drum means is minimized,

said screening drum means having a foraminous cylindrical outer wall and annular opposed sidewalls which together define a continuous annular trough means for retaining shredded scrap materials, said trough means being open along its inner circumference,

said annular trough means being subdivided annularly into a series of trough sections by transverse carrier means for lifting material upwardly toward the infeed side of said drums within said trough means upon rotation of said screening drum,

said carrier means comprising a series of foraminous transverse partition means extending between opposite sidewalls of said annular trough means, whereby a tumbling and screening action is achieved because of the slow rotational speed of said screening drum,

stationary shield wall means positioned closely adjacent to and spanning the open inner circumference of said trough means at least along the substantially vertically upwardly traveling portions of said screening drum means for retention of scrap materials within said trough sections until carried upwardly to the infeed side of said shredding drums.

4,134,557

DEVICE FOR PROPELLING GRINDING BODIES IN A GRINDING MILL

Armando Lazzari; Alfredo Cartoceti, and Eberhart Steinort, all of Varese, Italy, assignors to I.O.S. Industria Oxidi Sinterizzati S.r.l., Malgesso (Varese), Italy

Filed May 27, 1977, Ser. No. 801,064

Claims priority, application Italy, Sep. 29, 1976, 27771 A/76

Int. Cl.² B02C *17/18*

U.S. Cl. 241—170 **3 Claims**

1. A grinding apparatus comprising:

a housing defining a grinding chamber adapted to receive a material to be ground,

a nucleus stationarily secured substantially centrally in said grinding chamber, said nucleus being constructed of a magnetic material,

at least one grinding body constructed of a magnetic material and adapted to be placed in said chamber between said nucleus and said housing, and

means for generating an oscillating magnetic field in said chamber, said means comprising a plurality of stationary electric coils positioned at spaced locations around and exteriorly of said grinding chamber which, when connected to an alternating three phase source of electrical power, produces an oscillating magnetic field between said coils and said nucleus to thereby drive the grinding body between the housing and the nucleus.

4,134,558

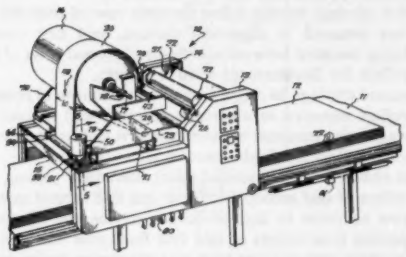
BRAKE CONSTRUCTION FOR CLOTH-LAYING MACHINE

Joseph A. Grillo, East Islip, N.Y., assignor to Cutting Room Appliances Corporation, Hicksville, N.Y.

Filed Jul. 21, 1977, Ser. No. 817,682

Int. Cl.² B65H *25/22, 23/06*

U.S. Cl. 242—75.43 **46 Claims**



1. A brake construction for braking a roll of fabric journalled on a cloth-laying machine comprising a machine frame having first and second frame portions spaced circumferentially of said roll, brake band means having first and second spaced band portions with an intermediate band portion therebetween, first means for attaching said first band portion to said first frame portion, second means for attaching said second band portion to said second frame portion, and motor means for selectively moving said intermediate band portion against said roll to effect braking thereof.

4,134,559

EQUIPMENT FOR PROCESSING MATERIAL IN SHEET OR RIBBON FORM

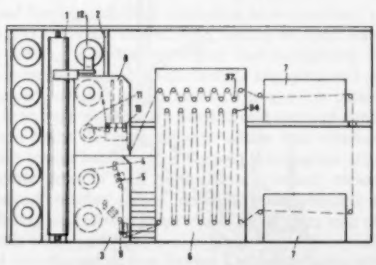
Frank-Ulrich Dyllus; Hans Kaulen, both of Grevenbroich, and Manfred Schmidt, Jülchen, all of Fed. Rep. of Germany, assignors to VAW-Leichtmetall GmbH, Bonn, Fed. Rep. of Germany

Filed Apr. 18, 1977, Ser. No. 788,415

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1976, 2617090

Int. Cl.² B21C *47/02*

U.S. Cl. 242—78.1 **6 Claims**



1. Apparatus for automatically joining the beginning of a first spool of metal ribbon to the end of a second spool of metal ribbon which is being unwound and fed to a processing device without halting the passage of ribbon through said processing device, which apparatus comprises:

means for holding said first and second spools in rotatable relationship to one another;

at least one wind-up spool for receiving ribbon which has unwound from said second spool, and passed through said processing device;

means for clamping, severing and joining the beginning end of said first spool of ribbon to the severed end of said second spool of ribbon; and

a storage apparatus comprising:

a frame;

a first row of aligned freely rotatable rollers mounted in a fixed position on said frame, and a second row of aligned freely rotatable rollers mounted in a fixed position on said frame opposite said first row of rollers,

a first carriage having a first movable row of rotatable rollers mounted in alignment thereon, said first carriage being mounted between said first and second rows of fixed rollers for displacement relative thereto,

a second carriage having a second movable row of rotatable rollers mounted in alignment thereon, said second carriage being mounted between said first and second rows of fixed rollers for displacement relative thereto,

said ribbon from said second spool alternately passing over rollers of said second fixed row and said second movable row en route to said processing device and alternately passing over rollers of said first fixed row and said first movable row en route from said processing device to said wind-up spool,

said second movable row of rollers being spaced by a predetermined distance from said second fixed row of rollers when said second row is rotating and feeding ribbon through said processing stage, and

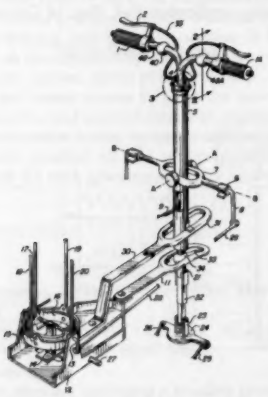
operating means for moving said movable rows of rollers, said second movable row of rollers being moved away from said second fixed row of rollers to create an elongated storage path between said movable and fixed rollers for said ribbon and allowing said processing device to operate on ribbon from said second reel while said wind-up reel is changed.

4,134,560

HELICOPTER CONTROL DEVICE

Eugene D. Messerschmidt, 8132 E. Impala, Mesa, Ariz. 85208

Filed Sep. 19, 1977, Ser. No. 834,233
Int. Cl.[2] B64C *27/58*
U.S. Cl. 244—83 F **5 Claims**



1. In a control system for a helicopter having:

(i) a collective pitch control mechanism for changing the pitch angle of the rotor blades;

(ii) a throttle control;

(iii) a tail rotor control for changing the pitch of the tail rotor blades; and

(iv) a cyclic pitch control mechanism for changing the tilt of the rotor disc;

an improved control comprising:

(a) a first control means pivotally mounted for pivotal movement in at least two directions, said first control means being operatively connected to said cyclic pitch control;

(b) second control means moveable relative to said first control means and operatively connected to said collective pitch control mechanism; and

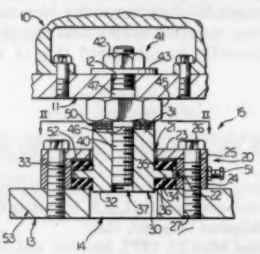
(c) locking means for selectively engaging or disengaging said first and second control means whereby said first and second control means can be locked in unitary engagement and said first and second control means moved in one pivotal direction to change the cyclic pitch in the longitudinal axis and moved in the other pivotal direction to change the cyclic pitch in the lateral helicopter axis and whereby said first and second levers can be disengaged and said second control means can be moved relative to said first control means to control collective pitch and rotated to operate the tail rotor control.

4,134,561

SOUND SUPPRESSING ENGINE MOUNTING MEANS

David W. Atkinson; Donald A. Kuntz, and William L. Sprick, all of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 19, 1977, Ser. No. 788,854
Int. Cl.[2] F16M *5/00*; F16F *15/00*
U.S. Cl. 248—632 **11 Claims**



1. Apparatus for mounting an engine on a frame having a frame opening, said engine having attaching means with an opening therein, comprising:

a preselected one of said attaching means and frame having a housing having a central opening and a chamber;

a spool having an outwardly extending flange, said spool being spaced from and extending through the housing and into the opening of the preselected one of the attaching means and frame to which the housing is associated, said flange being spaced from the housing walls and movably positioned within said housing chamber;

first and second resilient sound isolating elements each positioned within the housing chamber on an opposed side of the spool flange;

a threaded shaft extending from the spool and through the opening of the other of said attaching means and frame;

a threaded supporting member mateably connected to the threaded shaft between the attaching means and spool and in supporting contact with said other of the attaching means and frame, said supporting member having a protrusion of a construction sufficient for extending into the opening of said other of the attaching means and frame, and

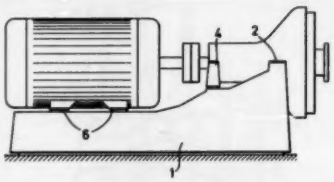
spacer means positioned between the supporting member and spool and being maintained in forcible contact with the spool by said support member for positioning the engine at a preselected location and supporting the supporting member by the spool through said spacer means.

4,134,562

MOUNTING BASE OF A DISK REFINER

Ilmari Paakkinen, Nojanmaa; Seppo Häkkinen, and Jouni Matula, both of Savonlinna, all of Finland, assignors to Enso-Gutzeit Osakeyhtio, Helsinki, Finland

Filed Apr. 14, 1977, Ser. No. 787,439
Claims priority, application Finland, Apr. 15, 1976, 761049
Int. Cl.[2] H02B *5/00*; F04B *35/04*; E02D *27/44*
U.S. Cl. 639 3 Claims



1. A mounting base for a disk refiner that includes a frame, a refiner housing, a longitudinally extending centrally located shaft and a driving motor; said mounting base comprising an integrated block of concrete absorbent to vibrations of the disk refiner; said block having:

(i) support surfaces formed thereon for supporting a motor driving the disk refiner, said support surfaces being situated at one end of the block and being located symmetrically in relation to the longitudinal central line of the base,

(ii) two front supports formed thereon for the refiner frame and housing, said supports being situated at the other end of said block and being located symmetrically in relation to the shaft of the disk refiner, and

(iii) two rear supports for the refiner frame, said rear supports being situated at a distance from the front supports and being located symmetrically in relation to the shaft of the refiner, said front and rear supports each being formed as column-like projections having free support ends positioned essentially in a plane extending along the longitudinal central line of the refiner shaft and being located above the plane defined by said support surfaces; said front supports being positioned to engage the refiner housing of the disk refiner and having a recess formed between them corresponding to the shape of the refiner housing; said front supports being reinforced in the longitudinal direction of the base by providing at the lower parts of the projections wedge parts with inclined surfaces.

4,134,563

PIPE SUPPORT

Louis P. Pollono, Hempfield Township, Hempfield County, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 28, 1976, Ser. No. 653,044
Int. Cl.[2] F16L *3/00*
U.S. Cl. 248—58 7 Claims

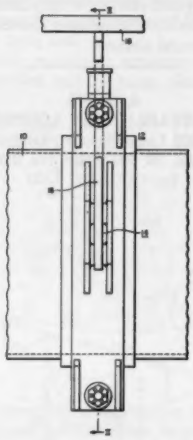
1. A support system comprising:

a thin-walled pipe containing a liquid therein at an elevated temperature;

a tubular metallic inner member comprising a tubular inside wall and a tubular outside wall, said inside wall and said outside wall forming an annular space therebetween, said inside wall having a diameter substantially equal to an outside radial diameter of said pipe, said inner member radially encircling and contacting said pipe;

thermal insulating means located within said annular space, said thermal insulating means being encapsulated within said inner member and comprising compacted load-bearing thermal insulation; and

means for clamping said inner member to said pipe,



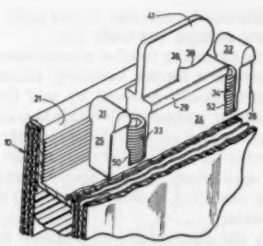
said thermal insulating means minimizing the amount of heat transferred from said pipe to said clamping means.

4,134,564

PANEL SYSTEM AND COMPONENTS

Gary D. Hanna, 6 Shamokin Dr., Don Mills, Ontario (M3B 2V1)

Filed Jan. 14, 1977, Ser. No. 759,442
Int. Cl.[2] A47G *29/02*
U.S. Cl. 248—243 3 Claims



1. A fastener for securing a panel to a hollow structural element having a slot and an outer surface and an inner surface, said panel having a channel extending around at least part of the periphery thereof, said channel having an outer limit, said fastener having a unitary structure and comprising a body means securable within said channel for engaging said panel, a hook-shaped member means and two projection means projecting from said body means beyond said channel outer limit when said body means is secured within said channel, said projection means being in spaced apart longitudinal alignment on opposite sides of said hook-shaped member means, said hook-shaped member means including a cam-shaped surface means facing said channel and spaced apart from said channel outer limit when said body means is secured within said channel, said cam-shaped surface having a shape defining with said channel outer limit a passage with a wide mouth and a decreasing width rearwardly of said mouth whereby said cam-shaped surface engages said inner surface of said structural element, during relative longitudinal fastening movement between the fastener and the panel on the one hand and the structural element on the other hand after insertion of said hook-shaped

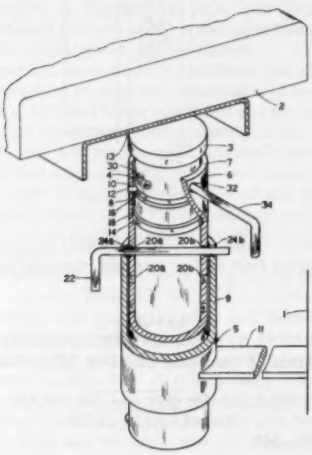
member means into said slot, to pull said fastener body and said panel towards said structural element, and each said projection means being longitudinally spaced from said cam-shaped surface so as to be pulled against said outer surface of the structural element during said relative longitudinal fastening movement to provide resistance to relative movement between the panel and the structural element.

4,134,565

ADJUSTABLE SEAT ASSEMBLY

James R. Carter, 9001 Lakeridge Dr., Louisville, Ky. 40272

Filed Jul. 18, 1977, Ser. No. 816,590
Int. Cl.[2] A47C *3/00*
U.S. Cl. 248—285 5 Claims



1. An adjustable seat comprising:
mounting means secured to a wall;
a first vertically extending tubular member mounted to said mounting means; a second vertically extending tubular member telescopically received by said first vertically extending tubular member with means thereon for adjusting the height of said second tubular member, said second tubular member having a socket therein, said socket being defined by upper inner walls of said second tubular with an inwardly extending shoulder portion at a preselected position therein;
a substantially flat disc cylindrical trunnion bearing insert resting upon said shoulder;
a vertically extending seat trunnion received by said second tubular member and extending upwardly beyond the upper extremity of said second tubular member defining a spacing between the upper extremities of said trunnion and said second tubular member, said trunnion resting upon said insert and disposed for rotational movement thereon; and,
a seat member attached to said trunnion whereby said seat member is spaced above said second tubular member.

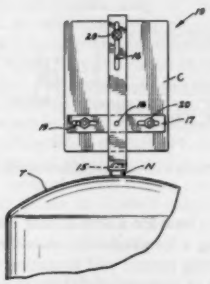
4,134,566

MOUNTING BRACKET FOR SUBMERSIBLE PUMP CONTROL BOX

Gerald L. Spitzack, R.R. #2, Box 22, Faribault, Minn. 55021

Filed Jul. 15, 1977, Ser. No. 815,927
Int. Cl.[2] F16M *13/02*
U.S. Cl. 248—309 R 1 Claim

1. A bracket for mounting the control box of a submersible water pump on the top of the pump pressure tank having an internally threaded nut positioned thereon on a vertical center axis,
(a) an upright support bar,
(b) means for integrally connecting the lower end of the support bar to the nut on the tank to hold the support bar in a vertical position,
(c) a unitary planar cross bar mounted at a medial point on the support bar and extending perpendicular thereto with arms on either side of the support bar,
(d) said support bar having an aperture above the cross bar,
(e) the cross bar having apertures in each arm whereby a



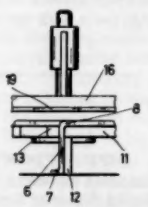
control box may be mounted on the bracket by fastening means extending between the box and through the apertures on the support bar and the cross bar,
(f) the cross bar being pivotally mounted on the support bar for movement of the cross bar between a use position perpendicular to the support bar and a collapsed position in longitudinal parallel alignment therewith, and
(g) all of said apertures being elongated slots extending longitudinally of the respective bars in which they are disposed.

4,134,567

APPARATUS FOR FORMING FANS

Gerd Kurscheid, 13 Alfred-Keller-Str., 5200 Siegburg, Fed. Rep. of Germany

Filed Aug. 23, 1976, Ser. No. 716,844
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1975, 2538270
Int. Cl.[2] B28B *21/42;* B29C *27/22*
U.S. Cl. 249—83 7 Claims



1. Apparatus for use in making a fibre-reinforced synthetic plastics impeller having a base disc and a plurality of impeller blades projecting axially from one surface of said base disc; said apparatus comprising a flat support plate to provide support for said base disc and a hollow member projecting from said support plate to define a cavity there-above, said member having supporting walls elongated in a radial inward direction, said supporting walls having smooth side surfaces, said supporting walls corresponding in size, shape and number to the impeller blades to be formed, peripheral notches defined between each adjacent pair of side surfaces of said supporting walls, each notch extending over the entire radial depth of at least one of the associated supporting walls and having a width in the peripheral direction so dimensioned to permit moulding

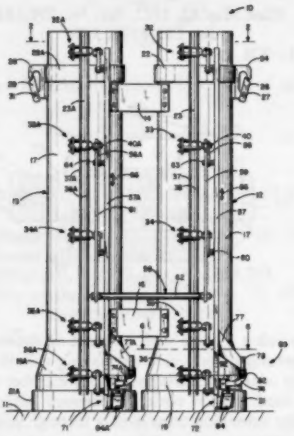
of impeller blades from fibre reinforced, age hardening fluid synthetic material on the supporting walls integrally with a base disc on said flat plate.

4,134,568

PLURAL MOLDS WITH COMMON ACTUATING MEANS

Alfred W. Christian, Woodstock, Canada, assignor to Hydrotile Canada Limited, Woodstock, Canada

Filed Apr. 7, 1977, Ser. No. 785,336
Int. Cl.² B28B 7/06
U.S. Cl. 249—118 **44 Claims**



1. A form assembly having an end adapted to surround a pallet used to make a concrete pipe comprising: a wall surrounding a chamber, said wall having an end adapted to surround a pallet and a longitudinal slit allowing the wall to be moved to an expanded open position and to be moved to a contracted closed position, first latch means mounted on the wall selectively operable to hold the wall in the closed position and to expand the wall to the open position, said first latch means including biasing means for moving the wall to the open position, second latch means mounted on the wall selectively operable to hold the pallet on the end of the wall and to release the pallet from said end of the wall, and common control means connected to the first latch means and second latch means.

4,134,569

AUTOMATIC CORE GATE

George W. Peppel, Farmers Branch, Tex., assignor to Ameron, Inc., Monterey Park, Calif.

Filed Aug. 12, 1977, Ser. No. 824,056
Int. Cl.² B28B 7/30
U.S. Cl. 249—179 **10 Claims**

1. An improved core and core gate used in casting concrete pipes comprising:

(a) a core defining in a closed position a longitudinal joint flanked by two core sides, one of the sides being displaceable relative to the other between an open and a closed position;

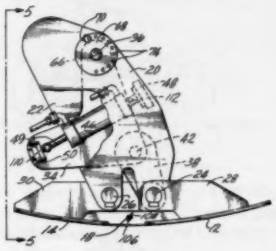
(b) a gate including:

(i) a hinge plate pivotally connected at a first pivot to the displaceable side of the core and at a second pivot to the other side of the core across the joint with the pivot axes paralleling the axis of the core, the hinge plate being pivotal between an open and a closed position;

(ii) an over-center link pivotally connected to the hinge plate for pivotal rotation between an open and a closed position;

(iii) a coordinator link pivotally connected to the over-center link and to the displaceable core side for pivotal rotation between an open and a closed position, the pivotal connections of the coordinator link being such that the coordinator link and the over-center link form an over-center linkage in the closed position of the core with a center that must be passed through during opening of the core; and

(iv) a remotely actuatable actuator means between the over-center link and the hinge plate to open and close



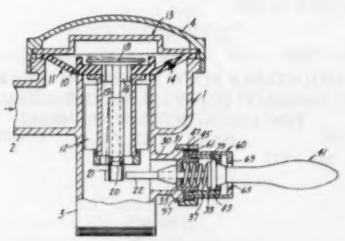
the core, respectively, by rotating the over-center link from its closed position about its pivot with the hinge plate past the center of the over-center linkage to the open position and to force the displaceable core side radially inward of the core, and rotating the over-center link from its open position about its pivot with the hinge plate to force the displaceable core side radially outward and form the longitudinal joint and past and center of the over-center linkage to the closed position.

4,134,570

TWO VOLUME FLUSH VALVE

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif. 94133

Filed Dec. 9, 1976, Ser. No. 745,461
Int. Cl.² F16K 31/145
U.S. Cl. 251—40 **3 Claims**



1. In a flush valve of the tilting pilot valve type in which a flow controlling diaphragm opens the discharge conduit in response to tilting of the pilot valve and its attached stem by engagement of said stem by a unitary rod translated by swinging movement of an actuating handle from a normal position; the improvement that comprises:

a housing secured to said valve and receiving the inner end of said actuating handle therein,

said housing comprising a tubular member fixedly secured to said valve and formed with an outer wall through which said handle projects,

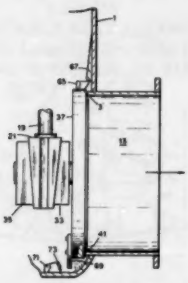
said outer end wall being formed with an opening having a reduced radial extent relative to said handle in one direction and an enlarged radial extent in another direction, whereby

the permitted angle of swing of said handle is dependent on the direction in which it is swung.

4,134,571
DOUBLE-DISC GATE VALVE

Seth J. Wheatley, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 3, 1977, Ser. No. 847,999
Int. Cl.[2] F16K 3/04
U.S. Cl. 251—86 10 Claims



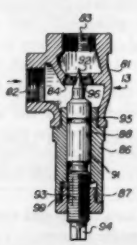
1. In a gate valve including a casing containing opposed annular seats respectively defining inlet and outlet ports; a gate assembly movable longitudinally in said casing and including inlet and outlet discs for respectively closing the inlet and outlet ports, spreaders respectively coupled to the discs to provide inlet and outlet spreader-and-disc assemblies, and a wedge positioned between and slidably engaged with said spreaders; means for longitudinally moving said assembly to and from a lowered position where said discs are between and in register with said seats and for transversely moving the disc-and-spreader assemblies, when in said lower position, to open and close said ports; and hold-down means carried by said casing for guiding the transverse movement of said discs outwardly and inwardly away from their seats; the improvement comprising:

a rigid member carried by the outlet disc and extending downwardly thereof, and a stop carried by said casing for intercepting said member to impose a limit to inward arcuate movement thereof during retraction of the outlet disc from its seat.

4,134,572
ADJUSTABLE FLOW METERING ORIFICE

Alfred C. Schmidt, P. O. Box 111, San Carlos, Calif. 94070

Filed Feb. 16, 1977, Ser. No. 769,016
Int. Cl.[2] F16K 1/12
U.S. Cl. 251—122 4 Claims

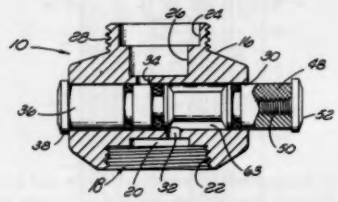


1. An orifice valve comprising a body having an inlet, an outlet, an apertured partition separating said inlet from said outlet, an orifice bushing in the aperture of said partition, said body downstream of said partition having an enlarged passage, a bonnet on said body aligned perpendicular to said orifice bushing, a spindle having a needle and an elongated cylindrical portion, said bonnet having a bore accurately receiving said cylindrical portion, first means to move said spindle in said bore relative to said orifice bushing, said needle being conical, said orifice bushing having a conical orifice substantially identically complementary to said needle, said orifice having a rounded entrance and a sharp outlet corner, and second means to secure said orifice bushing in said aperture accurately centered relative to said needle, the central axes of said orifice, needle, spindle and bonnet being precisely concentric.

4,134,573
FLUID FLOW STOP VALVE

Roderick G. Messinger, 450 N. Rossmore, Los Angeles, Calif. 90004

Filed May 12, 1977, Ser. No. 796,162
Int. Cl.[2] F16K 3/24
U.S. Cl. 251—324 1 Claim



1. A stop valve for use with a faucet or shower head, said valve comprising a body member having a fluid inlet, means adjacent said inlet for securing said body member to said faucet or shower head, a fluid outlet, a constant radius cylindrical fluid chamber extending transversely through said body member, a first passageway communicating said valve chamber with said fluid inlet, a second passageway communicating said valve chamber with said fluid outlet, a cylindrical valve member slidably mounted within said chamber and having an intermediary portion of reduced cross-sectional diameter, a pair of sealing members carried by said valve member externally adjacent each end of said intermediary portion of said valve member such that upon urging said valve member to a first position, said first passageway communicates with said second passageway about said intermediary portion of said valve member and upon urging said valve member to a second position, one of said sealing members seals said fluid outlet from said valve inlet preventing fluid flow through said stop valve, and a third sealing member carried by said valve member and spaced outwardly from said one sealing member, said one sealing member having a larger cross-sectional diameter than the remaining two sealing members.

4,134,574
DEVICE FOR STRINGING AN ELECTRICAL CONDUCTOR IN AN INSULATOR

Leonard P. Jean, Nashua, and Ernest J. LaChance, Sr., Milford, both of N.H., assignors to Hendrix Wire & Cable Corp., Milford, N.H.

Filed Sep. 6, 1977, Ser. No. 830,660
Int. Cl.[2] B65H 59/00
U.S. Cl. 254—134.3 R 4 Claims

1. A device for stringing an electrical conductor in an insulator comprising,

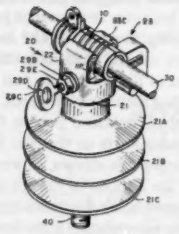
a first semi-tubular member having outwardly extending flange means at one end,

a second semi-tubular member having outwardly extending flange means at one end,

at least the major portions of said semi-tubular members being made from a moldable plastic material which is wear resistant,

means for detachably securing said semi-tubular members together to form a circular passage extending between them, and

each semi-tubular member comprising at least one metallic strip means embedded in its inner surface, said metallic



strip means forming a portion of the wall of said circular passage.

4,134,575
SPREADER FOR THE WIRES OF A MULTI-STRAND WIRE FENCE

Antonio M. Chavarria, Aristobulo del Valle, 1302 San Isidro-Martinez-Buenos Aires, Argentina

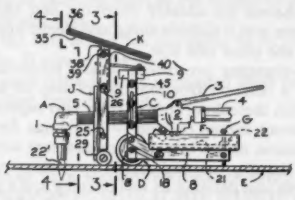
Filed Jun. 7, 1977, Ser. No. 804,293
Claims priority, application Argentina, Mar. 25, 1977, 266978
Int. Cl.[2] E04H *17/14*
U.S. Cl. 256—35 **6 Claims**

1. A spreader for the wires of a multi-strand wire fence including a top wire, a bottom wire and intermediate wires, said spreader comprising an elongated, substantially rectangular and relatively narrow flat planar metal plate having parallel planar faces bordered by side edges and end edges; said plate being formed with respective notches opening outwardly through each end thereof, for receiving such top and bottom wires, and with an aperture adjacent the closed inner end of each notch with said notches and apertures being aligned along the major axes of said plate, for receiving a fastening wire securing said plate to the wire received in the respective notch and maintaining said plate with its planar faces substantially perpendicular to the wires of said fence; whereby said spreader may be engaged with such top and bottom wires of the multi-strand wire fence and be supported solely by such top and bottom wires while it is being connected to such intermediate wires, leaving the operator's both hands free to effect fastening of the wires in position; said plate being formed with plural, longitudinally spaced notches opening outwardly through at least one side edge thereof for receiving the intermediate wires of said fence, while said plate is supported solely by such top and bottom wires, and retaining the intermediate wires in spaced relation to each other and to such top and bottom wires.

4,134,576
SAFETY CARRIAGE FOR SUPPORTING AND GUIDING AN ACETYLENE TORCH

Lester R. Livick, 15106 Beatty St., San Leandro, Calif. 94579

Filed Sep. 6, 1977, Ser. No. 830,919
Int. Cl.[2] B23K *37/00*
U.S. Cl. 266—68 **1 Claim**



1. A carriage for supporting and guiding a standard acetylene torch having a plurality of parallely arranged gas conveying tubes in which the gases are controlled by a hand operated valve;

(a) a first vertically extending frame adjustably connected to the tubes for supporting the torch, the frame having wheels for movably supporting it on the work sheet, and the torch having a nozzle pointing to the work sheet; whereby the frame can be guided for causing the flame from the nozzle to cut the work sheet;

(b) an anti-glare shield and means for adjustably connecting the shield to said frame;

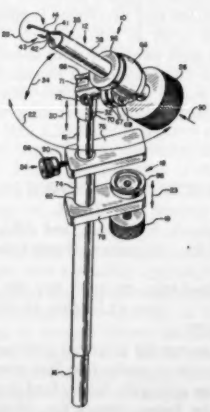
(c) a second vertically extending frame adjustably connected to the torch tubes and positioned between said first frame and the torch nozzle, the second frame having a cross arm with rollers at its ends for riding on the work sheet, the center of the cross arm being rotatably connected to the lower end of the second frame; and

(d) said second frame being adjustable on the torch tubes with respect to said first frame for raising the first frame to lift its wheels above the work sheet and permit an operator to swing said cross arm about its center so that the torch flame will make an arcuate cut in the work sheet.

4,134,577
FLY-TYING VISE

Alexander Price, Box 356, and Eric A. Price, 15829 Jackpine Rd., both of LaPine, Oreg. 97739

Filed Sep. 9, 1977, Ser. No. 831,733
Int. Cl.[2] B25B *1/22*
U.S. Cl. 269—71 **10 Claims**



1. A table clamp for clamping a support post-supported

fly-tying vise or other support post-supported device to a free edge of a tabletop, comprising:

a support post,

a support sleeve slidably receiving said support post therewithin,

a pair of separate clamping arms carried by said sleeve and extending transversely therefrom,

one of said arms including an opening therethrough near one end thereof for slidably receiving said sleeve such that said one arm is slidable along said sleeve toward and away from the other said arm,

a table-engaging protrusion means projecting outwardly from a table-confronting side of one of said arms at a position therealong spaced from said support sleeve,

and take-up means on one of said arms for forcing said protrusion means into firm engagement with a tabie surface, thereby creating a bind between a portion of said slidable arm defining its said opening and a portion of said support sleeve at said opening to hold said slidable arm in a preselected position and simultaneously create a compressive clamping force to cause said pair of arms to grip a tabletop and thereby clamp said support sleeve to said tabletop,

and top means carried by said sleeve and selectively engagable with said support post fixing said support post within said support sleeve in various adjusted positions along the length of the support post.

4,134,578

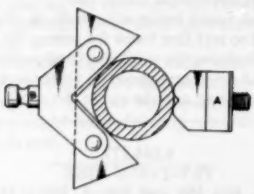
CLAMP

James R. Stanley, U.S. Federal Prison, PMB 39871-133, Atlanta, Ga. 30315

Filed Sep. 20, 1976, Ser. No. 721,126

Int. Cl.[2] B25B *1/10*

U.S. Cl. 269—249 **5 Claims**



1. A clamp comprising a frame having two rigid supports spaced mutually apart along an axis; a screw threadly mounted to one of said supports for axial movement along said axis; a first pressure contact member pivotably mounted to an end of said screw between said two frame supports; a yoke pivotably mounted to the other of said supports for rotary movement about said axis with two yoke arms straddling said axis; and a second pressure contact member mounted to each of said two yoke arms for rotary movement between said two frame supports about mutually parallel axes aside said frame axis.

4,134,579

CARD INSERTER FOR BINDING MACHINE OR THE LIKE

Kenneth J. Polarek, Effingham, and John R. Newsome, Shumway, both of Ill., assignors to World Color Press, Inc., Effingham, Ill.

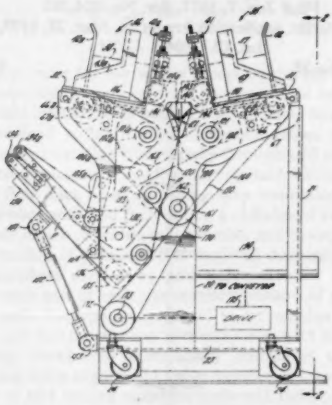
Filed Mar. 28, 1977, Ser. No. 781,842

Int. Cl.[2] B65H *39/00*

U.S. Cl. 270—52 **10 Claims**

1. A card inserter for inserting post cards in a series of volumes in motion in a production line comprising, in combination, a frame, an upwardly-facing feed plate mounted for reciprocation on the frame, means for driving the feed plate in feeding and retracting directions, a hopper stationarily mounted on the frame for holding a stack of cards superimposed on the feed plate, a friction roller recessed in the feed plate and having a one-way clutch connection, the feed plate having vacuum ports coupled to a source of vacuum, valve means interposed between the vacuum ports and the source of vacuum for applying vacuum to the lowermost card of the stack for transport of the card from the hopper during the feeding movement of the feed plate and for releasing vacuum during the retracting movement thereof, the feed plate having a shallow channel of concave profile formed therein in the region of the vacuum ports so that the lowermost card, upon application of vacuum, is drawn downwardly into concave shape away from the bottom of the stack and toward the friction roller, the hopper having a stationary stripper bar adjacent the path of feeding movement of the lowermost card for permitting such card to pass while preventing passage of the second and succeeding cards in the stack, and a driven conveyor including an inlet nip for engaging the transported card and for conveying it positively at high speed to the point of insertion.

8. A card inserter for inserting post cards in a series of volumes in motion in a production line comprising, in combination, a frame having a substantially vertical feed plane and a pair of feed plates on respectively opposite sides thereof, the

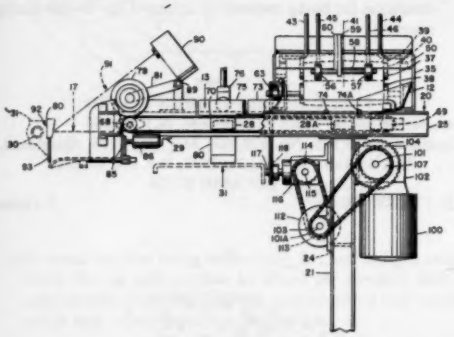


feed plates having upwardly facing supporting surfaces and being mounted for reciprocating movement inwardly and outwardly, a pair of hoppers on the frame for holding respective stacks of cards supported on the feed plates, a conveyor in the form of a pair of flat endless belts arranged face-to-face providing an inlet and an outlet, the belts being trained about a pair of inlet pulleys to form an inlet nip for driving the cards, the inlet nip being substantially aligned with the feed plane and at a level below the feed plates, means for driving the belts in unison at high speed, means coupled to the driving means for reciprocating the feed plates in phase with one another, means on the feed plates for gripping the lowermost card in each stack for transport from the hopper during inward movement and for releasing the card during outward movement, each of the inlet pulleys having an idler roller vertically opposed thereto, the idler rollers defining, with the associated belt, auxiliary driving nips substantially aligned with the supporting surfaces of the respective feed plates and closely adjacent the inlet nip, the hoppers being arranged closely adjacent the auxiliary driving nips so that only limited inward movement of the feed plates suffices to insure engagement of the leading edges of the lowermost cards in the auxiliary driving nips, the hoppers being in lateral alignment so that the cards transported by the feed plates are received at the inlet nip and are discharged at the outlet substantially in register with one another.

4,134,580
METHOD AND APPARATUS FOR HOPPER LOADER

Donald R. Duzinskas, Western Springs, and Anthony Chomenko, Chicago, both of Ill., assignors to W. F. Hall Printing Company, Chicago, Ill.

Filed Mar. 7, 1977, Ser. No. 774,870
Int. Cl.[2] B65H 5/22
U.S. Cl. 271—6 9 Claims

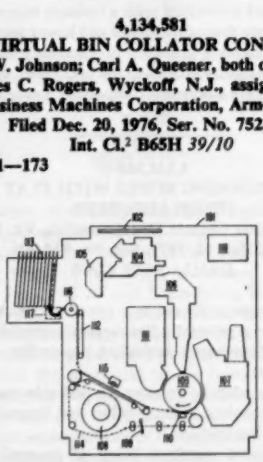


1. In apparatus for delivering signatures folded to form a backbone from a source stack to a supply stack, the improvement comprising: main conveyor means having an input section and a discharge end for moving signatures deposited at said input section along a first direction and for delivering said signatures to the top of said supply stack through said discharge end; means for moving said signatures from the bottom of said source stack in shingled relation along a second direction parallel to the backbone of said signatures and transverse to said first direction; and fixed support means for supporting said signatures as they are moved from beneath said source stack to a location above said main conveyor and for guiding said signatures while in continuously superposed relation onto said main conveyor, said support means including a plate positioned to receive signatures from said source stack and to support the trailing edge of said signatures above said main conveyor means until said signatures are completely extended over said main conveyor means, thereby to reduce the tendency of signatures being delivered from said source stack to enter the main conveyor stream before they are fully positioned over said main conveyor.

4,134,581
VIRTUAL BIN COLLATOR CONTROL

Frederick W. Johnson; Carl A. Queener, both of Boulder, Colo., and James C. Rogers, Wyckoff, N.J., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1976, Ser. No. 752,777
Int. Cl.[2] B65H 39/10
U.S. Cl. 271—173 12 Claims



1. Method for automatically controlling the operation of a sheet collator with K actual bins when collating a number M of multi-sheet sets, if M<K, wherein all first sheets of each of said M sets are successively introduced into said collator, including the steps of:

determining a number H of virtual bins, such that H>M, at least one of said H virtual bins consisting of at least two adjacent actual bins,

defining the actual bins constituting each virtual bin prior to the feeding of said first sheet of the second of said M sets into one of said bins,

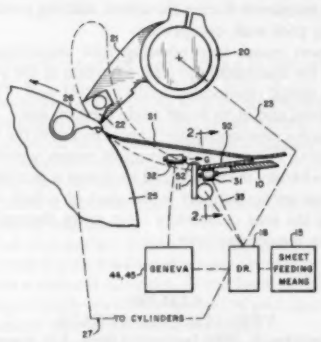
identifying the first actual bin not filled to its capacity of each of the H virtual bins, and

controlling sheet deflection for sequential sheet feeding into said identified first actual bins.

4,134,582
DEVICE FOR THE REGISTERING OF SHEETS IN PRINTING PRESSES IN WHICH THE SHEETS ARE FED IN AN UNDERLAPPED STREAM

Helmut Emrich, and Paul Abendroth, both of Offenbach am Main, Fed. Rep. of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG, Fed. Rep. of Germany

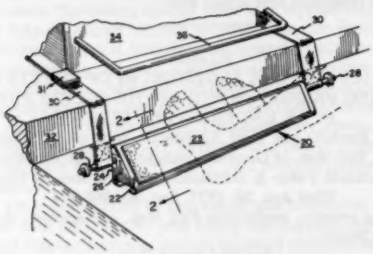
Filed Jun. 20, 1977, Ser. No. 808,084
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628122
Int. Cl.[2] B65H 9/00
U.S. Cl. 271—237 8 Claims



1. A device for the registering of sheets to be printed, the sheets being fed in an underlapped stream with each sheet projecting under the sheet ahead of it, comprising, in combination, a press drive, a feed table, means coupled to the drive for feeding the stream of sheets to the front of the table, a retractable front stop at the front edge of the table, means coupled to the drive for activating the front stop synchronized with the arrival of a sheet, a side guide adjacent the front portion of the table, the front stop and side guide defining a condition of accurate register for the sheet, a wiping mechanism adjacent the side guide including a lower wiping member and a cooperating upper wiping member for engaging a sheet between them for wiping the same into a laterally registered position against the side guide, a receiving cylinder coupled to the drive having grippers and spaced from the front edge of the table, a pre-gripper having a swing axis and coupled to the drive for gripping the leading edge of a registered leading sheet and for transporting it forwardly and upwardly into engagement with the grippers on the receiving cylinder accompanied by passage of the following sheet into a position approaching register at the front of the table, the pre-gripper swing axis being in generally vertical alinement with the front edge of the table so that a wedge-shaped gap is formed above the following sheet, interposing means including an arm in the plane of the gap coupled to the drive and mounted for movement from a retracted position momentarily to an active wiping position synchronized with the creation of the gap, the upper wiring member being in the form of a small diameter idler roller

mounted at the end of the arm for rotation about an axis perpendicular to the arm.

4,134,583
STARTING ASSIST DEVICE FOR SWIMMERS
James J. Davidson, 242 Welches Point, Milford, Conn. 06460
Continuation-in-part of Ser. No. 665,283, Mar. 9, 1976, abandoned. This application Mar. 30, 1977, Ser. No. 782,635
Int. Cl.[2] A63K *3/02*
U.S. Cl. 272—4 **17 Claims**

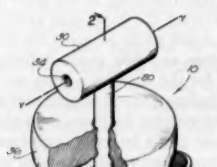


1. A starting assist instrument for supportingly assisting backstroke swimmers during the initial, starting push-off from a swimming pool wall, comprising:

(A) support means incorporating foot supporting surface means for maintaining at least a portion of the swimmer's foot in spatial relationship to the vertical wall of the swimming pool and at an acute angle thereto; and

(B) means for positioning the support means in the water and permitting removal of the support means within ten seconds, whereby the backstroke swimmer is provided with a firm and secure support at the start of a race while also having the area completely clear when the swimmer returns to the starting area.

4,134,584
VERSATILE ARM SKATE
Doris F. Rosenbusch, 3769 Inglewood Blvd., Los Angeles, Calif. 90066
Continuation-in-part of Ser. No. 711,697, Aug. 4, 1976, abandoned. This application Jul. 27, 1977, Ser. No. 819,326
Int. Cl.[2] A63B *21/06, 21/22*
U.S. Cl. 272—117 **13 Claims**



1. An exercise device for strengthening and coordinating wrist and arm musces comprising:

a base plate;

at least three wheels rotatably mounted on said base plate;

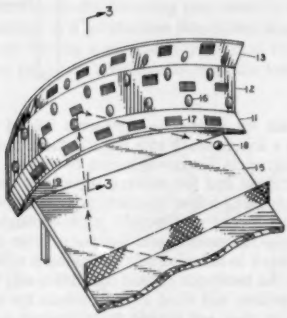
an elongated vertical member, a first end of said vertical member mounted to substantially the centroid of said base plate and extending upwardly from said base plate and terminating in a second end;

a handle;

means for mounting said handle to the second end of said elongated vertical member; and,

means for creating a tip-over angle of less than 30 degrees for said exercise device, whereby said device continues to rotate, if unrestrained, about an axis intersecting an adjacent two of said wheels when a tipping force sufficient to pass said tip-over angle is imparted to said device through said handle, the continued rotation causing an imbalance condition for being resisted by a user of the device during exercise.

4,134,585
TABLE TENNIS RETURN BOARD
Alex Semon, 64-46 211th St., Bayside, N.Y. 11364
Continuation of Ser. No. 670,948, Mar. 26, 1976, abandoned. This application Dec. 21, 1977, Ser. No. 863,039
Int. Cl.[2] A63B *67/04*
U.S. Cl. 273—30 **5 Claims**



1. A game apparatus, for use in conjunction with a table tennis table, comprising a curved three section rigid panel at least as wide as the table, each section extending the entire width of the table, said panel extending upward of the table and bowed away from the table, and means for affixing the curved panel to the table; wherein when affixed to the table, the lower section of the panel is sloped away from the table and is covered with a soft resilient material; wherein the upper section is sloped toward the table and is covered with a stiff resilient material; and wherein the center section is approximately vertical and is covered with a resilient material of yield quality intermediate that of the upper and lower sections; a said panel further includes a plurality of randomly spaced apart serrated members rigidly affixed to the said panel, wherein said serrated members are adapted for imparting a spin to a striking table-tennis ball.

4,134,586
PORTABLE RUNNING ROPES WITH FLAT SPRING CROSS MEMBERS
James R. King, 6804 Capstan Dr., Annandale, Va. 22003
Filed Jul. 12, 1977, Ser. No. 814,905
Int. Cl.[2] A63B *67/00*
U.S. Cl. 273—55 R **10 Claims**

1. A portable runway for use by a runner to practice running along a course on a generally flat surface comprising,

an elongated framework including a plurality of opposed side members,

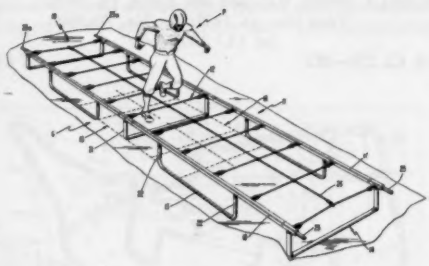
cross members adapted to support said side members in a spaced relationship to each other and inspaced relationship to said flat surface,

said cross support members being of generally U-shaped configuration and extending across said running course,

means connected to said framework providing a grid at a predetermined height above said surface and at predeter-

mined spaced intervals to define spaces along said course in which the runner is to place his feet during use,

said cross support members including a substantially flat center section lying along said course and two upstanding side legs to support said side members,



said center section being sufficiently flat and lying substantially flat on said surface to allow the runner's feet to substantially fully engage said surface along said course when said center section is stepped on.

4,134,587

ICE HOCKEY STICK

David A. Diederich, Chaska, Minn., assignor to The Northland Group, Inc., Chaska, Minn.

Filed Nov. 15, 1976, Ser. No. 742,017
Int. Cl.² A63B *59/12*
U.S. Cl. 273—67 A **18 Claims**

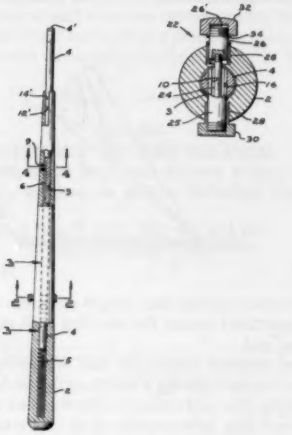
14. A hockey stick comprising: an elongated linear handle having a lightweight wood body, said wood body having opposite outside side surfaces of the body to reinforce the lightweight wood of the body, each sheet member having reinforcing fibers, all of said fibers being oriented along the longitudinal length of the sheet member, means securing the sheet members to said side surfaces of the wood body, a blade having sides, an inner end, and an outer end and a lower edge extended from the inner end to the outer end thereof, said blade and body having cooperating portions secured together to attach the blade to the body, reinforcing fabric means located adjacent opposite sides of the blade and lower portions of the sheet members on the lower part of the handle, and a plastic resin covering the sides of the blade and the lower portions of the sheet members to secure the fabric means thereto.

4,134,588

SPRING ACTUATED BILLIARD CUE

Carl L. Di Luzio, 48 Hampden St., Indian Orchard, Mass. 01151

Filed Nov. 16, 1977, Ser. No. 852,098
Int. Cl.² A63D *15/08*
U.S. Cl. 273—69 **4 Claims**



1. In a billiard cue of the type having a handle member with a longitudinal bore, a spring in the bore, a cue stick shaft pressed forwardly by said spring with the tip end portion of the stick projecting from the front end of the handle;

the combination of a slotted shaft and a manually releasable latch construction to impart different shaft stroking forces in using the cue, comprising:

a latch member mounted for limited transverse movement in the handle wall having

a reduced stem portion intersecting the bore and of a length coextensive with the bore diameter for registration therewith in a released condition of the latch member,

an enlarged catch portion at one end of said stem encased in the handle wall adjacent the bore, and

resilient means yieldably urging said catch portion into an intersecting relationship with said bore; and

a cue stick shaft slidably fitted in the bore provided with a portion having an elongated through slot extending longitudinally thereof and receiving said stem portion of the latch member,

said slot having a plurality of enlarged sections spaced therealong for registering and receiving said enlarged catch portion to establish a plurality of retracted shaft positions under various spring pressures,

said latch having a manual trigger element to release the catch portion from an enlarged slot section and register the reduced stem portion with the bore to effect a stroking movement of said cue stick shaft.

4,134,589

GOLF SWING TRAINING DEVICE AND METHOD

Joseph C. Arena, 920 Swede St., Norristown, Pa. 19401

Filed Jul. 28, 1977, Ser. No. 819,697
Int. Cl.² A63B *69/36*
U.S. Cl. 273—183 B **4 Claims**

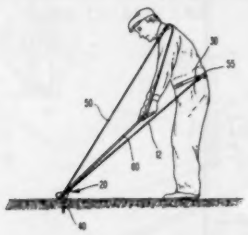
1. A golfer's aid device for trainee's use in practicing proper pivot and golf swing comprising:

a flexible substantially non-stretchable member forming a loop at one end and having a length such that it would extend upwardly in diverging relation to form two portions wherein each said portion further includes grasping means which can be adjusted to non-slipably engage said portions for detachably engaging and securing said por-

tions to opposed side of said trainee in a position approximating the waist of said trainee;

apertured means for engaging said loop and permitting said loop to freely pass therethrough;

anchoring means engageable with said apertured means for anchoring the same at a point located in front of and at a predetermined distance from said trainee's feet, wherein



said flexible member has a length sufficient to extend from said apertured means for securing said portions to said trainee; and

a second member secured to said anchoring means, said second member having a length such that it would extend upwardly over said trainee's right shoulder and around his neck and then downwardly along said trainee's left arm, said second member being grasped by said left hand.

4,134,590

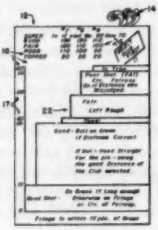
CUSTOMIZABLE GOLF PARLOR GAME

Robert J. Conrad, 9214 River Oaks Rd., Harrison, Tenn. 37341

Filed Jan. 4, 1977, Ser. No. 756,737

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—245 **9 Claims**



1. A golf parlor game for participation by one or more players, comprising:

a random number generator;

a plurality of club play cards associated with each player, each club play card having first indicia thereof for indicating an actual golf club associated therewith, and second indicia thereon corresponding to all the possible numbers generated by said random number generator and indicating the distance and character of a shot, different shot distance and character associated with different numbers on each card;

a plurality of customizable club play cards having said first indicia thereon, but not said second indicia shot distance and character representations thereon, said cards being customizable to provide accurate probabilities of shot distance and character corresponding to a player's actual golfing ability;

at least one hole layout having indicia in the form of a golf course hole;

at least one ball marker positionable on a hole layout after plotting a shot of given distance and character, determined from a club play card, on the hole layout; and

distance marking means for facilitating the plotting of a shot of given distance on a hole layout.

4,134,591

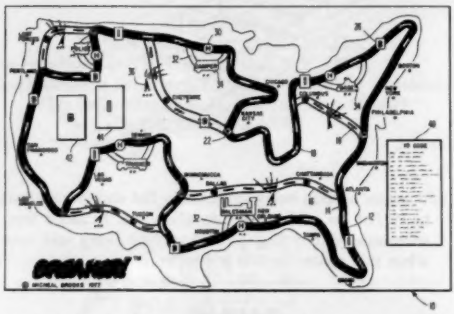
CITIZEN BAND RADIO BOARD GAME

Michael J. Brooks, P.O. Box 234, Exton, Pa. 19341

Filed Mar. 14, 1977, Ser. No. 776,990

Int. Cl.[2] A63F *3/04*

U.S. Cl. 273—252 **7 Claims**



1. A citizen band radio game comprising of:

(a) a board having defined thereon a road system comprised of a series of interconnected roads which form closed loops; said roads having a plurality of playing stations spaced apart from each other with certain of said playing stations having special indicia indicating additional action to be taken,

(b) a plurality of tokens each being identifiable with a player of the game,

(c) a simulated citizen band radio for each player, said radio having a plurality of apertures defined therein, each aperture having a distinctive number associated therewith, the number of apertures being equivalent to a given number of simulated radio channels,

(d) a plurality of peg shaped members of a shape to fit into the apertures of the radio,

(e) two decks of cards, the first deck being comprised of a plurality of "breaker" cards and the second deck being comprised of "inspection" cards and

(f) a spinner means having a series of numbers corresponding to the given number of simulated channels of the radio, the numbers corresponding to the distinctive numbers of said radio,

whereby a game is provided wherein the object is for each player to attempt to collect pegs which are used to simulate radio crystals for the player's radio until all the apertures of the radio are filled with the pegs, said pegs being obtained or lost in accordance with the number determined by the spinner, the indicia on the board and directions given by the "breaker" and "inspection" cards.

4,134,592

APPARATUS FOR PLAYING GAMES

Burke C. Pullman, 14, St. Leonard's Ter., London, S.W.3., England

Filed Dec. 13, 1976, Ser. No. 750,146

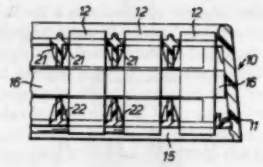
Claims priority, application United Kingdom, Dec. 11, 1975, 50931/75; Jun. 12, 1976, 24443/76

Int. Cl.[2] A63F *3/00*

U.S. Cl. 273—281 **1 Claim**

1. Apparatus for playing a game comprising a base, including front and rear housing members secured together by resilient snap-fit formations on said members, one of said members being formed to provide in conjunction with the other member a plurality of individual pockets, each associated with a window in the front housing member and an access opening in the

rear housing member, an individual rotary playing drum located one in each of said pockets, to be visible through the respective front windows, and also accessible through the respective rear opening, each said playing drum having a transparent peripheral wall and a printed strip carrying a plurality of different symbols located within and protected by said peripheral wall, said pockets being formed such that they mate with the peripheral surface of each said drum, said peripheral



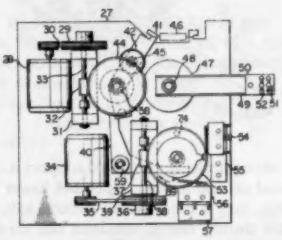
surface forming the sole bearing surface for each said drum, and including a friction damping element located in said base between said housing members, and engaging a plurality of said drums, to prevent accidental rotation thereof, and in which at least one of said housing members is formed with inclined lead-in guide surfaces extending into the interior of the housing at each of said pockets, to assist in locating each drum in the respective pocket during assembly.

4,134,593

AUTOMATICALLY OPERATED RECORD PLAYER SYSTEM

Katsuzo Hiramatsu, Kooriyama, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 26, 1976, Ser. No. 735,406
Claims priority, application Japan, Oct. 23, 1975, 50-127617
Int. Cl.[2] G11B *3/60*
U.S. Cl. 274—9 A **9 Claims**



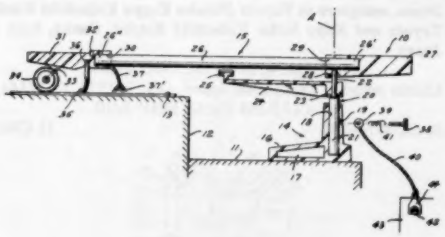
1. An automatically operated record player system comprising a turntable for supporting different size gramophone discs thereon and having turntable driving means, a tone arm means movable horizontally across said turntable and movable up and down into and out of contact with a disc on said turntable for picking up the contents recorded on the disc, a light directing means adjacent said turntable for directing light toward the disc supporting surface of said turntable, reflecting means on said turntable selectively covered by a graphone disc placed on the turntable depending on the diameter of said gramophone disc a plurality of light receiving elements adjacent said turntable selectively receiving light from said reflecting means in accordance with the outside diameter of a gramophone disc which is placed on the turntable and for intermittently producing a pulsed signal, charging and discharging circuit means including a capacitor and a resistor coupled to said light receiving elements for receiving said pulsed signal and for converting it to a saw-toothed waveform, electronic circuit means connected to said charging and discharging circuit means for determining whether or not said saw-toothed waveform exceeds a predetermined threshold magnitude, logic circuit means connected to said electronic circuit means and responsive to the result of the determination effected by said electronic circuit means for sensing both whether or not a gramophone disc is present on said turntable and the outside diameter of the gramophone disc, and electronic control circuit means connected to said logic circuit means and responsive to the sensed outside diameter of said gramophone disc and having an output connected to said turntable driving means for setting a rotational speed of said turntable at a predetermined magnitude in accordance with the sensed outside diameter of the gramophone disc.

4,134,594

ANTISTATIC RECORD CLEANER

Herman D. Post, Great Neck, and Edward Perper, Brooklyn, both of N.Y., assignors to Robins Industries Corporation, Comack, N.Y.

Filed Dec. 7, 1977, Ser. No. 858,531
Int. Cl.[2] G11B *3/58*
U.S. Cl. 274—47 **10 Claims**



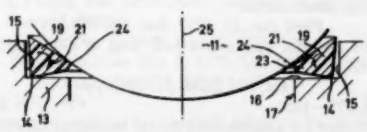
1. An antistatic record cleaner, comprising a support that can be secured to a turntable adjacent the platter thereof; a metallic pivot pin, one end of which is attached to said support; a pivot block formed with a recess in which said pivot pin is engageable; a metallic rod having an inner end contained within said pivot block, said inner end being exposed in said recess and directly engaging said pin, said pin and the metal-to-metal contact between said pin and said rod forming a continuous ground path from said inner end of said rod to said support; means on said support for connecting said ground path to a ground adjacent said support; and a filament extending downward from an outer end of said rod, one end of said filament being in electrical contact with said rod, the other end of said filament being engageable with a record on said platter.

4,134,595

ANNULAR SEALS

John G. E. Melville, Shoreham-by-Sea, England, assignor to Worcester Controls (U.K.) Limited, Sussex, England

Filed Aug. 1, 1977, Ser. No. 821,061
Claims priority, application United Kingdom, Aug. 4, 1976, 32541/76
Int. Cl.[2] F16K *25/00, 5/06;* F16J *15/32*
U.S. Cl. 277—9 **14 Claims**



1. A sealing arrangement comprising:
(a) first and second generally circular surface regions;
(b) an annular gap defined by said surface regions; and
(c) an annular member disposed in said annular gap and stressed to exert a sealing load on said surface regions to

form a seal therebetween, said annular member in said gap having a cross-sectional configuration which is different from the initial unstressed configuration of said member provided at the time of fabrication of said member and prior to its insertion into said gap which different cross-sectional configuration is compressively and extensibly hoop stressed in respective first and second portions of the radial section thereof by toroidal rotation of the member from said initial unstressed configuration through a substantial angle sufficient to hoop strain the material of said member beyond the instantaneous elastic limit thereof over a substantial proportion of the radial section of said member, said toroidally rotated member being free to react toroidally against said first and second surface regions under the action of said hoop stresses whereby said sealing load is produced substantially entirely by the toroidal reaction of said annular member.

4,134,596

OIL SEAL APPARATUS

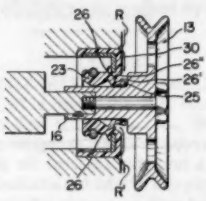
Yukio Kawai, Toyota, and Masaharu Adachi, Chiryu, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Koyo Seiko Kabushiki Kaisha, Osaka, both of, Japan

Filed Apr. 4, 1977, Ser. No. 784,537

Claims priority, application Japan, Oct. 9, 1976, 51-121411

Int. Cl.[2] F16J *15/32*; F01P *5/10*

U.S. Cl. 277—152 **11 Claims**



1. In an oil seal apparatus including a stationary casing, a shaft rotatable in said casing, and an oil seal ring for preventing passage of oil from between the shaft and the casing, the oil seal ring being fixed to said casing at one end and maintained in snug sealing contact with said shaft at the other end, said oil seal ring having a mounting portion fixed to the casing and a main lip portion snugly contacting said shaft at a first axial location, comprising the improvement wherein said oil seal ring has an auxiliary lip portion which snugly contacts the shaft at a second axial location farther outside of the casing than said first axial location, and said auxiliary lip portion defining at the free edge thereof an elongated annular flange surrounding and extending axially of the shaft in a direction away from said first axial location, said annular flange being preformed to define an annular groove around its periphery.

4,134,597

HOLDER FOR SELF-DRILLING DOWELS

Karl-Ernst Udert, Triesen, Liechtenstein, and Josef Entner, Frastanz, Austria, assignors to HILTI Aktiengesellschaft, Schaan, Liechtenstein

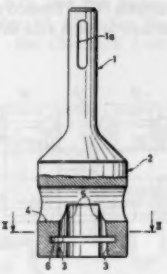
Filed Jun. 21, 1977, Ser. No. 808,727

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1976, 2630116

Int. Cl.[2] B23B *31/06, 31/44*

U.S. Cl. 279—103 **9 Claims**

1. A holder for a self-drilling dowel having a locking-in cone with said holder having an axially extending frusto-conically shaped bore for holding the locking-in cone on the self-drilling dowel, the bore in said holder having a larger diameter first end through which the locking-in cone is inserted and a smaller diameter second end spaced axially from the first end, said holder having an opening extending transversely of and intersecting the bore adjacent the second end thereof for receiving an expelling tool for the locking-in cone, wherein the improvement comprises that said bore has a surface extending in the axial direction thereof for contacting and holding the locking-in cone, said surface having a plurality of recesses extending



axially of the bore from the first end thereof toward the second end thereof and outwardly from said surfaces, and said recesses being uniformly angularly spaced apart around said surface of the bore for dividing said surface into a plurality of angularly spaced axially extending strips with said strips holding the locking-in cone.

4,134,598

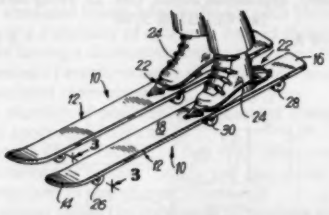
LAND SKIS

Yukihiro Urisaka, 86 Prospect Park W., Brooklyn, N.Y. 11215

Filed Jan. 10, 1978, Ser. No. 868,301

Int. Cl.[2] A63C *17/06, 17/18*

U.S. Cl. 280—11.22 **12 Claims**



1. A land ski comprising elongated support means simulating a conventional ski and having upper and lower surfaces, front and rear ends, and a longitudinal central axis situated in an upright plane during use of the land ski, ski-binding means carried by said support means on said upper surface thereof for connecting a ski shoe thereto, said ski-binding means being situated on said upper surface of said support means closer to said rear end than said front end thereof, and only three wheels situated beneath said lower surface of said support means and only three connecting means respectively connecting said three wheels to said support means, said three wheels including front, rear, and intermediate wheels with said rear wheel being situated beneath a part of said support means situated in the region of a rear part of said ski-binding means, with said intermediate wheel situated forwardly of said rear wheel beneath a part of said support means situated to the rear of a front end region of said ski-binding means, and with said front wheel situated at a substantial distance forwardly of said rear wheel beneath a part of said support means situated between said ski-binding means and said front end of said support means, said three connecting means including two connecting means respectively connecting said intermediate and rear wheels to said support means for rotary movement only about central axes of said intermediate and rear wheels which extend transversely with respect to said support means while being normal to said upright plane and the latter extending midway through

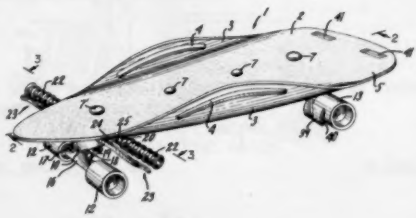
said intermediate and rear wheels so that the latter are symmetrical with respect to said upright plane, the third of said connecting means connecting said front wheel to said support means also for rotary movement about a central substantially horizontal axis of said front wheel which extends transversely with respect to said ski and which is normal with respect to said upright plane during forward travel of said elongated support means in the direction of said axis thereof, said third connecting means also connecting said front wheel to said elongated support means for swivelling movement with respect thereto about a substantially upright axis which is situated in said upright plane the latter also passing substantially midway through said front wheel when said axis thereof is normal to said upright plane so that during forward travel of said support means in the direction of said axis thereof said front wheel also is symmetrical with respect to said upright plane, all of said wheels having outer substantially cylindrical surfaces for engaging a surface on which the land-ski travels, and said outer surfaces of said wheels being relatively narrow and each terminating in opposed circular curved sides, the width of each of said wheels at said outer surface thereof being sufficiently small to provide for engagement of each wheel with the surface on which the land-ski travels at one or the other of the curved sides thereof during lateral tilting of said support means in one direction or the other, said rear wheel having a position with respect to said support means for reliably supporting the user of the land ski when the user leans rearwardly, while the relationship between said intermediate and rear wheels is such that the latter has a lesser frictional engagement with a surface of travel than said intermediate wheel when the user leans forwardly while during such forward leaning with the weight of the user supported by said intermediate wheel and with the lesser frictional engagement between said rear wheel and said surface of travel said front wheel is pressed by the user with a greater force against said surface of travel while being capable of swivelling about said upright axis to execute a turn.

4,134,599

RUNNERLESS ROLLER SLED

Dante DiMille, 501A Surf Ave., Brooklyn, N.Y. 11224; Edward Dredger, 2752 E. 22nd St., and Thomas Passantino, 26-42 E. 7th St., both of Brooklyn, N.Y. 11235

Filed Jan. 23, 1978, Ser. No. 871,223
Int. Cl.[2] B62B *11/00*
U.S. Cl. 280—87.01 **9 Claims**



1. A runnerless roller sled which comprises:
a bed having a center line;
a longitudinal, laterally flexible support member discontinuously attached to said bed beneath said center line by a plurality of spaced pins, the forwardmost pin being a pivot pin, said support member having a front and rear section;
a front pair of roller wheels attached transversely to and beneath said front section;
a rear pair of roller wheels attached transversely to and beneath said rear section;
a steering bar attached transversely to said front section forward of said pivot pin and having handle grips at each end;
a pair of brake levers mounted on said steering bar, one forward of each handle grip;
a pair of brake rods, one each connected to one of said brake levers and slidably mounted along a lateral face of said support member;
a pair of spring-loaded brake rocker arms, one each pivotally mounted on a lateral face of said rear section of said support member and connected to one of said brake rods; and
a pair of brake shoes, one operatively connected to each brake rocker arm and engageable with one of said rear roller wheels.

4,134,600

ROLLER SKI APPARATUS WITH SPRING SUSPENSION

Benjamin J. McDonald, deceased, late of Canyon Country, Calif., by Dorothy H. McDonald, administratrix, 27604 Sand Canyon Rd., Canyon Country, Calif. 91351

Filed Apr. 25, 1977, Ser. No. 790,443
Int. Cl.[2] A63C *17/26, 1/28*
U.S. Cl. 280—87.04 A **12 Claims**

1. Roller ski apparatus comprising: elongated foot-supporting platform means, a plurality of supporting wheels movably secured to each end of said platform means along the longitudinal axis and adjacent the opposite end portions thereof and including a plurality of skate-type roller wheels having limited steering capability in response to a shift of the rider's weight crosswise of said ski apparatus, spring means interposed between said platform means and at least the wheels supporting the rear ends thereof thereby biasing said rear wheels away from the underside of said platform means about a pivot axis extending crosswise of said platform means and effective to simulate the bounce experienced in snow skiing as a rider using said ski apparatus rolls along an uneven surface, bracket means secured to and projecting outwardly from the opposite lateral sides of said platform means, and a control handle extending upwardly from the outer end of each of said bracket means to a convenient height for grasping by the rider's hand, said control handle means having limited freedom of movement in a vertical plane extending generally parallel to the longitudinal axis of said platform means and manipulatable by the rider to control lateral banking tilt of said platform means while changing the travel direction thereof.

4,134,601

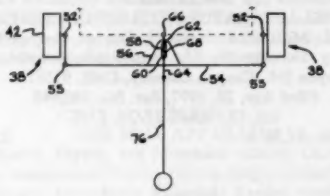
STEERING APPARATUS FOR A TRAILER VEHICLE

Robert L. Propst, Ann Arbor, Mich., assignor to Herman Miller, Inc., Zeeland, Mich.

Division of Ser. No. 672,658, Apr. 1, 1976, Pat. No. 4,052,084. This application Oct. 3, 1977, Ser. No. 838,644
Int. Cl.[2] B60D *1/16*
U.S. Cl. 280—408 **9 Claims**

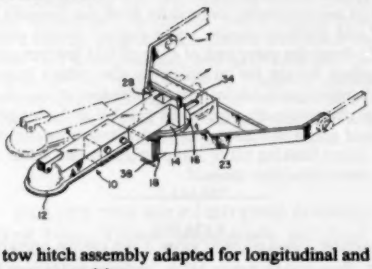
1. Steering apparatus for a vehicle having a frame with front and rear ends, a plurality of wheel assemblies connected to said frame for reducing road friction, means pivotally connecting a pair of said wheel assemblies to said frame at the front end thereof, each of said front wheel assemblies being pivotal about an associated vertical axis, said steering apparatus including a connecting member extending between and being connected to

said front wheel assemblies and operable to provide for simultaneous pivoting of each of said front wheel assemblies about its associated vertical axis, said connecting member being pivotally connected at one end thereof to one front wheel assembly and at the other end thereof to said other front wheel assembly, the pivotal connection of said connecting member to each of said front wheel assemblies being spaced a preselected distance from the associated vertical axis of each of said front wheel assemblies, a tow member, means pivotally connecting said tow member to said frame between said front wheel assemblies for pivotal movement in generally horizontal directions, said tow member being displaced both transversely and



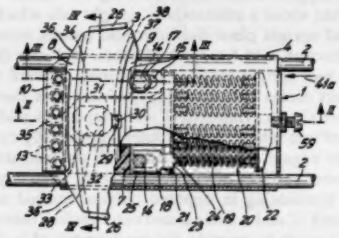
longitudinally of said vehicle during pivoting thereof, and means coupling said tow member to said connecting member operable to transfer only the transverse displacement of said pivoted tow member to said connecting member, said coupling means including means forming a slot on one of said members extending generally longitudinally of said vehicle, pin means on said other member and positioned to be disposed in said slot, the distance between said pin means and the pivotal connection of said tow member to said frame being less than the distance between the associated vertical axis and the pivotal connection of said connecting member to each of said front wheel assemblies.

4,134,602
TRAILER HITCH
Ernest F. Boger, 7502 5th Ave. South, Seattle, Wash. 98108
Filed Jan. 18, 1978, Ser. No. 870,354
Int. Cl.[2] B60D *1/06*
U.S. Cl. 280—478 A **9 Claims**



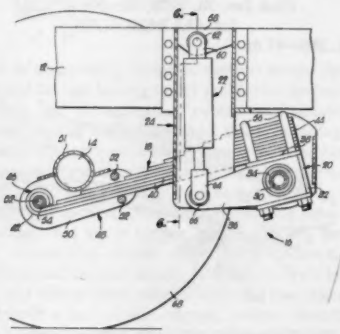
1. A tow hitch assembly adapted for longitudinal and pivotal adjustment, comprising:
- a bar having a hitch socket at a forward end,
- a frame member rigidly secured to a trailer,
- pivot means pivotally mounting the bar on the frame member for pivotal movement about a vertical axis, said pivot means including first means slidable longitudinally of said frame member and second means pivotally mounted relative to said first means, and
- self-latching means for releasibly automatically locking said first and second means with said bar in a towing position relative to said frame member and longitudinally aligned with said frame member.

4,134,603
SAFETY SKI BINDING
Reinhold Zoor, Dachau, Fed. Rep. of Germany, assignor to Heinrich Wunder KG., Fed. Rep. of Germany
Filed May 16, 1977, Ser. No. 797,238
Claims priority, application Fed. Rep. of Germany, May 15, 1976, 2621758; Dec. 27, 1976, 2658992
Int. Cl.[2] A63C *9/08*
U.S. Cl. 280—614 **30 Claims**



1. A safety ski binding, comprising a support; means for securing said support to a ski; a carriage having a boot-supporting portion; guide means provided on said support and defining for said carriage a path extending substantially transversely of the skiing direction; means for yieldably connecting said carriage to said support so that the carriage is fully separable from said support by moving, in its entirety, along said path in response to the application of a predetermined force; discrete hold-down devices for the front and rear ends of a ski boot; and means for coupling only one of said hold-down devices to said carriage.

4,134,604
VEHICLE SUSPENSION
William E. Jackson, Omaha, Nebr., assignor to Jackson Lift Co., Inc., Arlington, Nebr.
Filed Jul. 7, 1977, Ser. No. 813,474
Int. Cl.[2] B60G *11/46*
U.S. Cl. 280—704 **9 Claims**



1. In a lift-type, auxiliary wheel and axle assembly for a vehicle provided with a frame:
- an elongate, springy beam having one end thereof secured to the axle of said assembly;
- power means carried by said frame for raising and lowering said axle; and
- mechanism for protecting the power means against damage, said mechanism including structure for isolating the power means from shock forces imparted to the beam through the wheels of said assembly during over-the-road travel, said structure including:

a crank having a mount swingably securing the crank to the frame,
means attaching the power means to the crank for swinging the latter; and
means joining the opposite end of the beam to the crank for swinging movement therewith,
said attaching means being in an upright plane disposed intermediate the mount and said axle.

4,134,605

ARRANGEMENT FOR CONNECTING AN ATTACHMENT TO A VACUUM CLEANING DEVICE

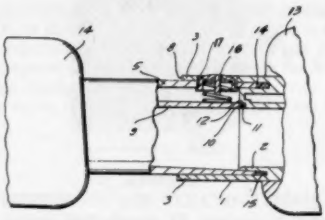
Wieland Gühne, Remscheid, and Paul Lienenlüke, Sprockhövel, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Filed Jul. 13, 1977, Ser. No. 815,365

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1976, 224538

Int. Cl.² A47L *9/24*

U.S. Cl. 285—7 **10 Claims**



1. In a vacuum cleaning device of the type having an air conduit including at least two consecutive sections, an arrangement for sealingly and detachably connecting the associated ends of the consecutive sections, comprising two associated connecting sleeves each connected to one of said associated ends, one of said connecting sleeves including an inner portion having an outer circumferential surface and an outer portion having an inner circumferential surface which is spaced from said outer circumferential surface to bound therewith a receiving groove which is circumferentially non-circular, the other connecting sleeve having a projecting portion which is also circumferentially non-circular as to be compatibly and fittingly receivable in said groove of said one connecting sleeve in the assembled condition of the consecutive sections, for preventing relative turning of said sleeves.

4,134,606

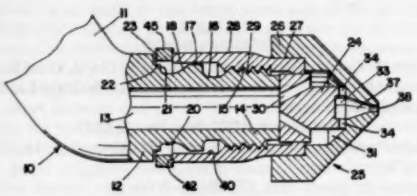
WELD JOINT

Frank Menti, Jr., Maple Heights, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 10, 1977, Ser. No. 850,173

Int. Cl.² F16L *13/02*

U.S. Cl. 285—21 **8 Claims**



1. A welded joint between partially telescoped inner and outer members, the outer member having an internal thread spaced from one end thereof and a bore between said end and said internal thread, the inner member toward one end thereof having an external thread engaged with the internal thread and having a transverse shoulder inwardly of the external thread, said bore having a diameter greater than the major diameter of the external thread, weld metal fused to said one end and said shoulder to form a leak proof welded joint therebetween, said inner member having a cylindrical portion within said bore and of larger diameter than the major diameter of said external thread, said inner member having an annular groove between said shoulder and said cylindrical portion and radially opposite at least a portion of said weld metal whereby in the event a radially inwardly projecting burr of smaller diameter than said cylindrical portion is produced by cutting through the welded joint, said cylindrical portion will engage the burr upon unthreading of the outer member from the inner member and expand the diameter of the burr so that it may pass over the external thread.

4,134,607

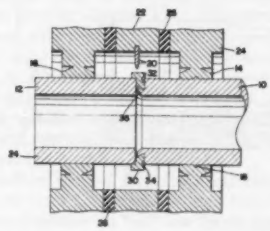
MEMBER FOR WELDING TO ANOTHER MEMBER

Jerry V. Koski, Parma, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 2, 1976, Ser. No. 654,335

Int. Cl.² F16L *13/02*

U.S. Cl. 285—173 **7 Claims**



1. A first metallic member to be welded to a second metallic member, said first member having a recess formed therein at one end thereof, said recess formed by a transverse shoulder and an extension projecting axially outwardly therefrom to receive a welding collar which is fixedly attached thereto, said welding collar being of a metal different from the metal of said members and completely filling said recess, said welding collar having an inner recess formed by an internal cylindrical wall and a transverse surface to receive and radially and axially locate an end portion of the second member relative to the first member.

4,134,608

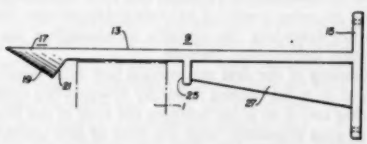
COMBINATION DOOR STOP AND CATCH

Joseph R. Pool, 1809 Merkley Ave., W. Sacramento, Calif. 95691

Filed Feb. 21, 1978, Ser. No. 879,238

Int. Cl.² E05C *19/06*

U.S. Cl. 292—76 **2 Claims**



1. A combined door stop and catch comprising a flexible bracket arm having means at one end for use in affixing said arm to a wall with said arm extending substantially normal to

such wall, said arm, at its opposite end having a downwardly extending tongue, said tongue having a substantially arcuate downwardly tapering frontal surface and a steeper rearward camming surface, said arm at an intermediate location thereon, having a depending stop spaced from said tongue by a distance sufficient to receive the edge of a door with which the combined door catch and stop is to be used and spaced from said mounting means a distance slightly in excess of the length of a door knob on such door, whereby when affixed to a wall in the path of an opening door and at a location in line with an edge of such door, said door, in engaging the downwardly tapered surface of said tongue will flex said arm sufficiently to enter the space behind said tongue and engage said stop to preclude contact of such door knob with such wall, said door being precluded from self closing by said tongue functioning as a catch, said arm, mounting means, tongue, and stop being molded as a unitary structure.

4,134,609

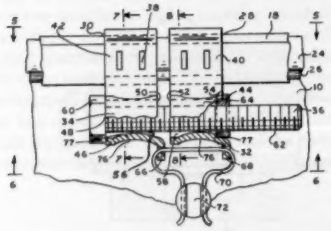
DRUM CONTAINER CLOSING RING ASSEMBLY

Cesar Santoni, Hamilton, Canada, assignor to Greif Bros. Corporation, Delaware, Ohio

Filed Aug. 24, 1977, Ser. No. 827,328

Int. Cl.[2] E05C *19/18*

U.S. Cl. 292—256.67 **5 Claims**



1. A closing ring assembly for releasably securing a cover on a drum container of the type in which the upper surface of the container chime is overlapped by a peripheral flange of the cover which presents an upwardly facing rounded shoulder forming an upwardly facing first cam surface, said container having a rounded shoulder in its outer surface spaced downwardly a distance beneath the top of the chime and forming a downwardly facing second cam surface, which comprises:

a split ring formed of a flexible material and being so constructed and arranged to encircle the top of the drum container with the cover in place and to bring the ends of said split ring in proximity to each other whereby bolt clips mounted on said ends as will be described hereinafter can be joined by a bolt, said split ring having an inner surface adapted to mate with and engage the first and second cam surfaces;

a first bolt clip mounted on said split ring adjacent to the first end of said split ring;

a second bolt clip mounted on said split ring adjacent to the second end of said split ring;

each of said bolt clips comprising a tube having flared, open first and second ends to facilitate insertion of the bolt and a bore communicating between said tube ends, each tube having an outer inwardly extending groove and internal inwardly extending rib operable to strengthen the tube and resist deformation thereof;

said mounting of the first and second bolt clips positioning them so as to be cocked inwardly towards the center of said ring and at an angle bringing the bore of the first bolt clip in axial alignment with the bore of said second bolt clip;

a threaded bolt removably positioned in the bore of each bolt clip, connecting between the first bolt clip and the second bolt clip; and

threaded means associated with said bolt and said bolt clips for drawing together and moving apart the ends of said split ring.

4,134,610

PROCESS FOR THE PREPARATION OF SEMI-RIGID POLYURETHANE FOAM HAVING EXCEPTIONAL SHOCK-ABSORBING PROPERTIES AND VEHICLE BUMPERS THEREOF

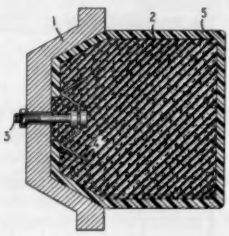
Frank W. Lindewall, Stenungsund, Sweden, assignor to Berol Kemi AB, Stenungsund, Sweden

Filed Dec. 27, 1976, Ser. No. 754,469

Claims priority, application Sweden, Dec. 29, 1975, 7514661; Feb. 13, 1976, 7602076

Int. Cl.[2] B60R *19/08*; C08G *18/14*; B29D *27/04*

U.S. Cl. 293—71 R **23 Claims**



1. A process for preparing semi-rigid polyurethane foam having a high shock-absorbent capability that remains substantially undamaged by high compression even after compressions as high as 60% over a wide range of temperatures, and which does not acquire a permanent deformation or deformatcion set in excess of 1% even after rapidly repeated compressions, which comprises reacting a polyisocyanate; a polyether polyol having a molecular weight within the range from about 2,000 to about 10,000; from about 1 to about 5% by weight of water per part by weight of polyether polyol; from about 1 to about 6% by weight of at least one member selected from the group consisting of urea and thiourea per part by weight of polyether polyol; and a cross-linking compound having at least three active hydrogen atoms per molecule that are reactive with isocyanate groups and having a molecular weight below about 1000 in an amount from about 5 to about 25% by weight per part by weight of polyether polyol; the amount of polyisocyanate being selected to give an isocyanate index within the range from about 0.7 to about 1.4 at a temperature at which reaction proceeds within the range from about 30° to about 130° C until a polyurethane foam is produced.

4,134,611

FOLDING ROOF

William R. Craven, Birmingham, and Leslie Lloyd, West Bromwich, both of England, assignors to Endrust Holdings Limited, Birmingham, England

Filed Sep. 8, 1977, Ser. No. 831,517

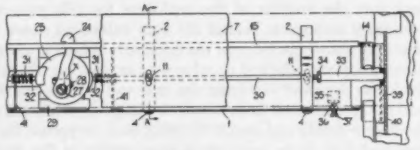
Claims priority, application United Kingdom, Sep. 16, 1976, 38314/76

Int. Cl.[2] B60J *7/10*

U.S. Cl. 296—137 C **11 Claims**

1. A folding roof assembly for closing an opening in a surface, said assembly comprising a flexible cover, cross-members slidable on guides extending along longitudinal side edges of the opening, the cross-members supporting the flexible cover

so that the latter is movable between open and closed positions, and a mechanism carried by the front cross-member for securing the cover in its closed position and for tensioning the cover, said mechanism including (a) a relatively rigid member to which the front of the flexible cover is secured, said relatively rigid member being mounted for sliding movement with the front cross-member relative to the guides and for movement relative to the front cross-member towards and away from a sealed position in which the relatively rigid member is



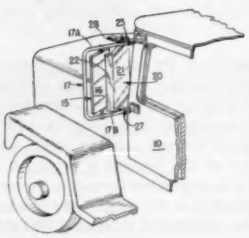
sealed against the surface of the front end of the opening when the front cross-member is adjacent the front end of the opening, (b) a manually operable retainer device which is engageable with an abutment at the front and of the opening to retain the cover in its closed position, and (c) at least one element to which the relatively rigid member is secured, said at least one element co-operating with a respective part at the front end of the opening during movement of the cover into its closed position to move the relatively rigid member into its sealing position.

4,134,612

VEHICLE MIRROR CLEANING DEVICE

Joseph E. Nelson, Bolingbrook, Ill., assignor to John W. Hopping, Bolingbrook, Ill., a part interest

Filed Sep. 12, 1977, Ser. No. 832,437
Int. Cl.[2] B60R 1/06, 1/12
U.S. Cl. 296—84 B **2 Claims**



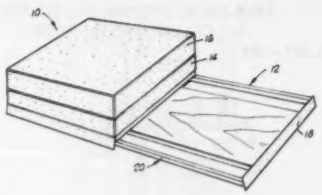
1. A vehicle mirror cleaning device for use with a motor vehicle having an outside rear view mirror used by the driver of such vehicle, said device comprising an air deflection screen mounted on said vehicle and disposed between the associated outside mirror and the driver, said air deflection screen being formed of a transparent material permitting the driver to observe the operative face of the associated mirror, said screen including a substantially larger planar air engaging portion disposed at an angle to the longitudinal axis of the associated vehicle and including an air deflecting portion for directing a stream of air impinging upon said air engaging portion onto the operative face of the associated mirror thereby to direct a stream of air across the face of the mirror and provide a cleaning effect thereon, and means for mounting said air deflecting screen for pivotal movement relative to the associated mirror, said means comprising a pair of clamps carried by the upper and lower edges of said screen, each of said clamps having C-ends formed thereon for securing said clamp to mounting members carried by the associated vehicle, each of said clamps including a laterally extending arm having a slot therethrough, said screen having male members extending outwardly from the upper and lower edges thereof and through the respective slots in said arms, and means for releasably securing said arms to said male members whereby said air deflection screen is rotatably mounted relative to said clamps and also is movable within said slots for movement relative to said clamps, thereby to vary the angle and position of the air deflecting screen relative to the associated mirror so as to vary the pattern of the flow of air across the operative face of said mirror.

4,134,613

CONVERTIBLE FURNITURE STRUCTURE

Clifford K. Logan, Jr., 4865 N. Blackwelder, Oklahoma City, Okla. 73118

Filed Jun. 2, 1977, Ser. No. 802,364
Int. Cl.[2] A47C 17/14, 13/00
U.S. Cl. 297—107 **1 Claim**



1. A convertible furniture sturcture which comprises:

a first frame member adapted to be supported horizontally on the floor, said first frame member having forward and rearward ends connected in spaced relation by parallel side structural members;

a second frame member slidably supported on top of said first frame member, said second frame member including:

forward and rearward ends connnected in spaced relation by parallel side structural members;

a leg attached thereto for supporting one end thereof above the floor so that said second frame member can be moved relative to said first frame member from a position substantially coincident with said first frame member to an expanded position whereby the end of said second frame member opposite said leg is supported on an end of said first frame member; and

a structural member connected between said forward and rearward ends of said second frame member and parallel to said parallel side structural members of said second frame member;

a first rectangular cushion attached to said second frame member;

a second rectangular cushion removably positioned on top of said first cushion, said second cushion having a thickness equal to the thickness of said first cushion plus the thickness of said second frame member whereby when said second frame member is moved to said expanded position and said second cushion is disposed on said first frame member, the top surfaces of said first and second cushions are positioned at equal heights above the floor;

means for stopping said first and second frame members after relative movement between said coincident and expanded positions, said stop means including a downwardly extending post attached to said second frame member at the end thereof opposite said leg positioned to extend into the interior of said first frame member whereby as said second frame member is moved relative to said first frame member between said coincident and expanded positions, said downwardly extending post contacts the ends of said first frame member and limits the movement of said second frame member with respect thereto; and

means for guiding said first and second frame members during relative movement between said coincident and expanded positions, said guide means including an upwardly extending post attached to said first frame member at said rearward end thereof positioned to extend into the

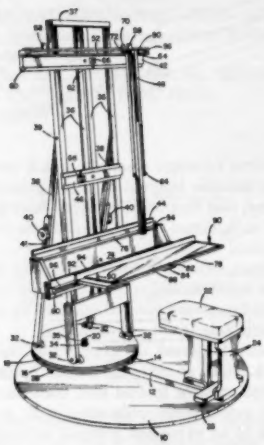
interior of said second frame member adjacent said structural member connected between said forward and rearward ends of said second frame member which structural member is parallel to said parallel side structural members of said second frame member, whereby as said first frame member is moved relative to said second frame member between said coincident and expanded positions, said upwardly extending post contacts said second frame member and limits the movement of said first frame member with respect thereto.

4,134,614

MOBILE EASEL AND SEATING MEANS

Gordon W. Fielding, Sr., 41 Lone Pine Path, Weymouth, Mass. 02188

Filed Jul. 1, 1977, Ser. No. 812,323
Int. Cl.[2] A47B *97/04, 39/00*
U.S. Cl. 297—156 **11 Claims**



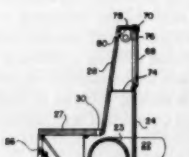
4. An artist's easel comprising: a fixed base; assembly support means rotatably mounted on said fixed base; seating means mounted on said assembly support means; and canvas support means rotatably mounted on said assembly support means wherein said canvas support means are mounted on an upper canvas support base which is rotatably mounted on a lower canvas support base which, in turn, is mounted on said assembly support means.

4,134,615

SEATING SETUP

John F. Jenkins, 137 N. Shore Rd., Absecon, N.J. 08201

Filed Apr. 4, 1977, Ser. No. 784,654
Int. Cl.[2] A47C *7/72, 25/05*
U.S. Cl. 297—180 **4 Claims**



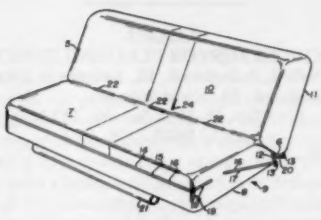
1. A seat for a plurality of persons seated side by side having a top seating portion on which they can sit and front, side and back walls extending down to form with that seating portion an enclosure underneath that seating portion, a self-contained heating unit adapted to heat the air for the space within the enclosure, pairs of openings in the front wall elongated in the up-and-down direction, the individual openings being located beside each other in position and size to receive at least the greater part of the lower legs and feet of occupants of the seat when they are inserted at least partly in the backward direction and each having a door hinged at the top and adapted to swing back into the interior of the enclosure for this purpose, and individual enclosures behind the door extending down to substantially above the floor of the enclosure which is underneath the seat top and adapted to otherwise at least mainly surround the lower legs and feet from the rear and sides when they are within the enclosure underneath the seat top, while permitting the above-mentioned doors to swing back to permit the lower legs and feet to be inserted at least partly in the backward direction and go at least mainly into the enclosure underneath the seat top.

4,134,616

SEAT COVER

George L. Christensen, 624 N. First W., Tremonton, Utah 84337

Filed Dec. 29, 1977, Ser. No. 865,604
Int. Cl.[2] A47C *31/10*
U.S. Cl. 297—188 **8 Claims**



1. In a seat cover for covering an automotive vehicle seat that has a seat cushion and a back cushion, the seat cover comprising a rectangular blanket folded upon itself at one edge and fastened to form at least one pocket to be arranged along the front edge of the seat cushion, while a forward portion of the remainder of the blanket is arranged to cover the seat cushion and a back portion thereof to cover the back cushion,

a piping attached to the edge of the blanket which forms the top of the pocket and extending beyond it at each end for attachment to structural members of an automotive vehicle seat; and

means for attaching the back portion of the blanket to a back cushion of an automotive vehicle seat.

4,134,617

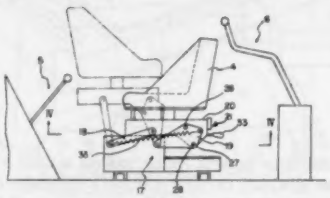
DRIVER'S SEAT MOUNTING STRUCTURE FOR A TRACTOR

Yoshitaka Matsubara, Osaka, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Jun. 21, 1977, Ser. No. 808,523
Claims priority, application Japan, Jun. 25, 1976, 51-84539[U]; Jun. 26, 1976, 51-84464[U]
Int. Cl.[2] A47C *3/18*
U.S. Cl. 297—345 **3 Claims**

1. In a driver's seat mounting structure for a tractor having a body carrying a first work implement at the front part thereof, a further work implement at the rear part thereof, an operation unit disposed in front of the driver's seat and associated with said first work implement, and a further operation unit disposed behind the driver's seat and associated with said further work implement, said two operation units being positioned at different vertical levels, said driver's seat being turna-

ble between a forward facing position and a rearward facing position, said driver's seat mounting structure comprising a mounting member carrying said driver's seat for rotation about a vertical axis, first locking means for locking said seat relative to said mounting member in forward facing position and rearward facing position, a parallelogram link mechanism connecting said mounting member to the tractor body, said parallelogram link mechanism being oscillatable and lockable on axes extending transversely of the tractor body, whereby said driver's seat is moved forward and rearward and up and down



relative to the tractor body to provide easy access to each of said operation units, second locking means for locking said mounting member in an upper position and a lower position, and handle means operatively connected to said first and second locking means for causing said locking means to lock and unlock said mounting member, said handle means being movable in horizontal and vertical planes, the movement of said handle means in one plane being operative to lock and unlock the first locking means and in the other plane to lock and unlock the second locking means.

4,134,618

RESTORATION OF A LEACHED UNDERGROUND RESERVOIR

Charles A. Kossack, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 29, 1977, Ser. No. 865,646
Int. Cl.[2] E21B *43/28*
U.S. Cl. 299—5 **6 Claims**

1. A method for the restoration of an underground reservoir subsequent to solution mining of a mineral from a subterranean formation containing same via the reduction of the level of totally dissolved solids in said reservoir which comprises cycling clean water through said reservoir.

4,134,619

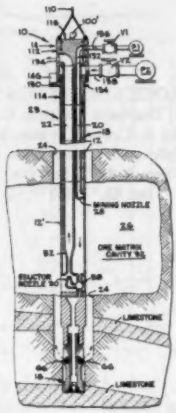
SUBTERRANEAN MINING

Philip R. Bunnelle, Santa Clara, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Sep. 15, 1977, Ser. No. 833,423
Int. Cl.[2] E21B *43/28*
U.S. Cl. 299—17 **54 Claims**

1. A drilling and mining method for first drilling a hole from the surface into a subterranean ore strata with a multi-section drilling and mining tool including a tool string with a drill bit at its lower end and thereafter removing ore from the strata with the tool, comprising the steps of progressively rotating and lowering the tool string to drill a hole from the surface to the ore strata, assembling the tool section by section as the drilling progresses and until the lower end of the tool enters the ore strata to be mined, directing a fluid at a first pressure and capacity downwardly along a first path into the bottom of a hole being drilled during drilling to lift cuttings to the surface, directing another fluid downwardly along a second path isolated from said first path during mining, directing and processing liquid along one of said paths during mining at a second pressure and capacity and diverting it from its downward path into a jet of liquid projecting transversely of the tool against the ore to form a slurry of ore and liquid, and releasing a fluid at a third pressure and capacity during mining from adjacent the bottom of the other of said paths into the slurry in a slurry return path isolated from the other two paths for lifting the slurry to the surface.

25. In a slurry mining apparatus, a conduit section comprising; an outer conduit having screw threads on both ends for threaded attachment to other sections, means defining at least two inner conduits eccentrically disposed within the outer conduit and having complementary stab connectors on oppo-



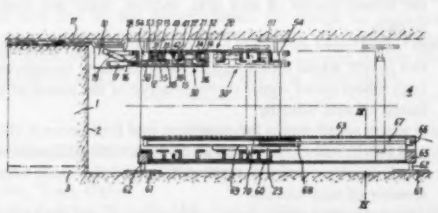
site ends thereof, a first inner conduit mounting means near one end of each conduit rotatably received and held from axial movement within the outer conduit for supporting the weight of both inner conduits from one end when the conduits are vertically oriented, and a second inner conduit supporting means rigidly secured to one of said inner conduits and loosely receiving said other conduits.

4,134,620

CHANNELLING MACHINE FOR CUTTING A PRELIMINARY GROOVE AROUND THE WORKING FACE OF A TUNNEL

Alfred A. M. Valantin, Clermont, France, assignor to Sipremec, Nanterre, France

Filed Nov. 22, 1977, Ser. No. 853,837
Claims priority, application France, Nov. 26, 1976, 76 35718
Int. Cl.[2] E21D *9/08*
U.S. Cl. 299—33 **12 Claims**



1. A channelling machine for cutting a preliminary groove or cut around the working face of a tunnel being excavated, said channelling machine comprising a tool suport for carrying a cutting tool projecting forwardly therefrom, a continuous guide and drive track assembly, a carriage mounted for orbital movement on and within said continuous guide and drive track assembly along the entire peripheral contour of the tunnel being cut, said continuous guide and drive track assembly including at least two radially inwardly disposed guide rails and at least one radially inwardly disposed drive rail, guide rollers mounted on said carriage and engaged for movement along the guide rails of said guide and drive track assembly, and a hollow support frame of cross section similar to that of

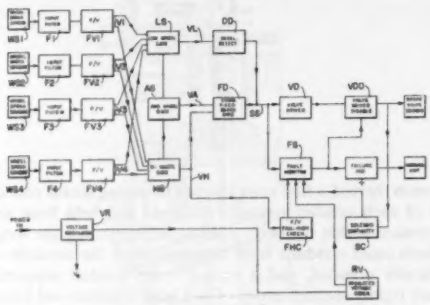
the tunnel being cut, said guide and drive track assembly being fixed with respect to and confined entirely inside said support frame, said guide and drive track assembly including a back-up rail radially inwardly spaced from said support frame and associated with the one of said guide rails located in the vicinity of the front end of said support frame for receiving said guide rollers therebetween.

4,134,621

ANTI-WHEEL LOCK SYSTEM FOR TANDEM AXLES

Daniel G. Smedley, Dearborn Heights; Gary L. Hopkins, Farmington, and John A. Urban, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 9, 1977, Ser. No. 831,903
Int. Cl.[2] B60T *8/02*
U.S. Cl. 303—96 **9 Claims**



1. A lock control system for use with a vehicle having first and second spaced apart, independently rotatable wheels associated with one axle and third and fourth spaced apart independently rotatable wheels associated with another axle, and having a braking system for applying braking forces to said wheels, and comprising:

means responsive to an applied lock signal for controlling said braking system to relieve the braking forces on said wheels;

means for providing first, second, third and fourth wheel speed signals having values respectively representative of the wheel speeds of said first, second, third and fourth wheels;

high wheel speed means for receiving said first, second, third and fourth wheel speed signals and providing therefrom a high wheel speed signal representative of the speed of the fastest of said wheels;

low wheel speed means for receiving said first, second, third and fourth wheel speed signals and providing therefrom a low wheel speed signal representative of the speed of the slowest of said wheels;

an average wheel speed means connected to said high wheel speed means at the high wheel speed signal output thereof and connected to said low wheel speed means at the low wheel speed signal output thereof and responsive to said high and low wheel speed signals for producing a signal of amplitude between and approximating the average of said high and low wheel speed signals, said average wheel speed means being free of direct connection to said first, second, third and fourth wheel speed signal providing means; and

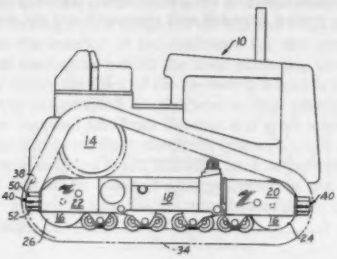
logic circuit means for providing a said lock signal when characteristics of the high and low wheel speed signals indicate a lock condition in one or more of said wheels of either of said axles.

4,134,622

SCRAPING APPARATUS FOR TRACK-TYPE VEHICLES

Ronald L. Krolak, Morton; James T. Duke, Peoria, and Arthur J. Ritter, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 28, 1977, Ser. No. 763,479
Int. Cl.[2] B60S *1/68, 1/62*
U.S. Cl. 305—12 **8 Claims**



1. A scraping apparatus for a track-type vehicle having a frame, a wheel having a vertical diameter and a horizontal diameter and an endless track having a chain and shoes, said endless track being entrained about the wheel with a portion of the track tangent to the wheel at the horizontal diameter being horizontally displaced from a portion of the track aligned with the vertical diameter, comprising:

a first generally planar scraping element having first and second opposed cutting edges, and a curved edge extending between the first and second cutting edges, said first cutting edge lying above a horizontal plane containing the horizontal diameter, said second cutting edge lying below the horizontal plane, said first scraping element being positioned substantially vertically parallel to the portion of the track chain which is tangent to the wheel at the horizontal diameter, said curved edge curving from its center toward the vertical diameter; and

a second scraping element having first and second cutting edges which form a general "C" configuration and being connected to the first scraping element, said first cutting edge having one end connected to the first scraping element adjacent the curved edge above the horizontal plane, said second cutting edge having one end connected to the first cutting element adjacent the curved edge below the horizontal plane, said cutting edges having their other ends connected substantially at the horizontal plane.

4,134,623

SYSTEM FOR PROCESSING AN ELECTRIC SIGNAL USING ELASTIC SURFACE WAVES

Pierre Tournois, and Charles Maerfeld, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 629,905, Nov. 7, 1975, abandoned. This application May 27, 1977, Ser. No. 801,247
Claims priority, application France, Nov. 8, 1974, 74 37079
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—313 **1 Claim**

1. A system for processing an electric signal using elastic surface waves, comprising:

a piezoelectric substrate,

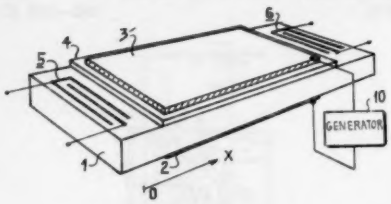
at least one electromechanical transducer receiving said signal, termed the initial signal, and generating elastic waves on the surface of said substrate,

first means for exciting electromagnetic waves corresponding to a second signal, said exciting means comprising two metallic interdigital combs deposited on said surface of said substrate between which combs the electromagnetic wave is produced by application of said second signal, interacting with said elastic waves to form a time-independent spatial potential pattern, representing the

correlation function between said initial signal and said second signal,

means for fixing said pattern,

second means for exciting at least a surface wave corresponding to a third signal, interacting with said pattern to



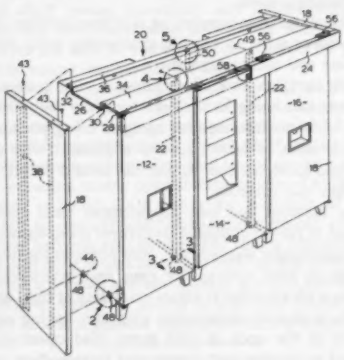
form a further surface wave, termed a resulting wave, which represents a function selected from a group consisting of the convolution and the correlation functions, between said third signal and the signal represented by said pattern.

4,134,624

FRAMING UNIT FOR A PLURALITY OF RECTANGULAR STRUCTURES

Jay B. S. Moyer, Jordan, Canada, assignor to Moyer Diebel Limited, Jordan Station, Canada

Filed May 1, 1978, Ser. No. 901,845
Int. Cl.² A47B *97/00*
U.S. Cl. 312—204 **6 Claims**



1. A framing unit for a group of a plurality of rectangular structures placed side by side comprising:

(a) an end panel member for each end of the group of a size to substantially completely cover the side of the respective end structure,

(b) a top cross member of a length to extend the full width of the group and adapted to have the two end panel members fastened to the respective ends thereof,

(c) an intervening spacing member for each gap between two immediately adjacent structures adapted to be fastened to the top cross member and to the respective immediately adjacent machines, and

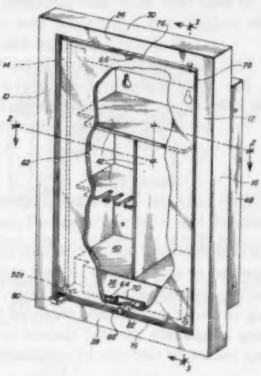
(d) a top front member hinged to the front edge of the top cross member and movable on the hinge between a depending position in which it depends in front of the group of structures to shield the top front edges of the structures and provide a uniform height front edge, and another position in which it is above the structure top front edges to permit access thereto.

4,134,625

BATHROOM CABINET

James J. Palka, Arlington Heights, Ill., assignor to General Bathroom Products Inc., Elk Grove Village, Ill.

Filed Jan. 16, 1978, Ser. No. 869,846
Int. Cl.² A47B *67/00*
U.S. Cl. 312—206 **3 Claims**



1. A low cost, fully molded bathroom cabinet comprising a front section and a rear section, the front section having outer side and upper and lower front walls and top and bottom walls, inner top and bottom walls and offset inner spaced rear walls, a pivot seat on one side of said inner top wall and an aligned pivot seat on the inner bottom wall, the rear section being offset from said front section and having a top, bottom, side and rear walls, the forward ends of said top, side and bottom walls being integral with and extending rearwardly from said inner rear walls, integrally formed shelves in the interior of said rear section, a mirrored door for said cabinet comprising a mirror and a backing board therefor, said backing board having offsets therein extending vertically and between the side margins thereof, forwardly extending flanges on the margins of said backing board between which the mirror seats, the upper and lower portions of said backing board having aligned seats therein and at one side thereof, a removable headed pivot pin loosely seated in said inner top wall seat of said first section and said seat upper portion of said backing board, a lower pivot pin having a flange extending outwardly of said pivot and positioned substantially medially of the ends of said lower pivot, said lower pivot seated in said seat in said inner bottom wall and said seat in said lower flange, the flange on said lower pivot positioned between the respective two pivot seats, a handle for said opening in said door positioned on the lower end thereof and on the side opposite said lower pivot.

4,134,626

INSULATED DOOR AND METHOD OF CONSTRUCTION

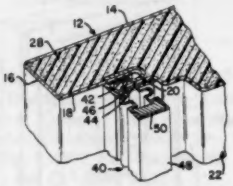
Myron G. Kordes, Parkville, Mo., assignor to Hobart Corporation, Troy, Ohio

Division of Ser. No. 711,453, Aug. 4, 1976, Pat. No. 4,053,972.
This application Mar. 28, 1977, Ser. No. 781,721
Int. Cl.² F25D *11/00*
U.S. Cl. 312—214 **3 Claims**

1. In an insulated door construction including a door face of open, tray-like configuration having an outer wall, a side wall portion extending from said outer wall and a rim extending from said side wall portion inwardly over said outer wall in spaced relationship thereto and terminating in an inner edge defining an opening into said tray-like face, a drum having an outer periphery disposed over said opening in said face and defining with said face a hollow enclosed chamber, and a foamed in situ insulating material substantially filling said chamber and interconnecting said face and said drum the improvement comprising:

retaining means extending about the edges of both said face rim and said drum periphery,

that portion of said retaining means extending about said edge of said face rim providing an opening of substantially greater width than the thickness of said edge of said face rim and into which said edge of said face rim is loosely received in non-clamping relationship,



said portion of said retaining means and that portion of said face rim received in said portion of said retaining means defining a cavity extending about said door, and

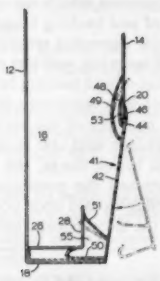
a gasket having an anchoring portion received in said cavity without being adhesively secured therein or attached to said retaining means or said rim by mechanical fasteners.

4,134,627

FOAM IN PLACE BREAKER STRIPS

Walter T. Kuskowski, Montreal, Canada, assignor to Canadian General Electric Company, Ltd., Toronto, Canada

Filed Oct. 7, 1977, Ser. No. 840,439
Claims priority, application Canada, Oct. 28, 1976, 246930
Int. Cl.[2] B65D *25/18*
U.S. Cl. 312—214 **6 Claims**



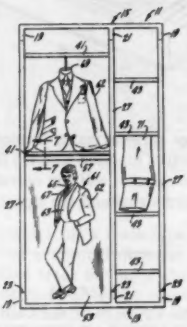
1. In a refrigerating appliance comprising an encasement wall structure, a liner structure nesting within said encasement with a cavity therebetween, a foam insulating material expanded within said cavity, adjacent forwardly located edge portions of said wall structures being connected by a thermal breaker strip of resilient plastic material, said breaker strip including a cheliform seal adjacent a first edge thereof, and a wedging seal adjacent a second edge thereof opposed to said first edge, said encasement wall structure including a channel means for receiving said wedging seal in wedging and sealing relationship, the improvement wherein said breaker strip includes first and second sealing flanges respectively associated with said cheliform seal and said wedging seal and located outwardly therefrom, each said flange being resiliently biased into sealing relationship against the inside wall surface portions within said cavity to enclose therewith a small chamber respectively enshrouding said cheliform seal and said wedging seal.

4,134,628

DISPLAY FIXTURE

Leonard T. Mann, Wheaton, Ill., assignor to Hart, Schaffner & Marx, Chicago, Ill.

Filed Aug. 8, 1977, Ser. No. 822,677
Int. Cl.[2] A47B *81/00*
U.S. Cl. 312—239 **3 Claims**



1. A display fixture including:

a base member and a top member of similar generally rectangular configuration,

a plurality of uprights connecting said base member and said top member with an upright connecting each corner of said base and said top members,

additional uprights extending between said base and top members and being located intermediate said corner uprights with said intermediate uprights being positioned on opposite sides of said fixture in alignment with one another and located closer to one end of said fixture than to the other end thereof,

said base member and said top member each being constructed of tubing of square transverse cross-section forming a rectangular shaped ring, stub portions located at the corners of said rectangular ring and intermediate the corners with said stub portions extending at right angles to the plane of said rectangular ring and having openings located in the ends of said stubs, said openings being adapted to receive said corner and intermediate uprights in a telescoping relationship,

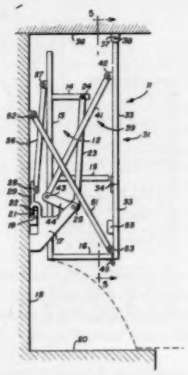
shelves supported on said uprights with said shelves supported by means of shelf standards located in vertical grooves formed in said uprights and secured thereto, vertically spaced slots formed in said standards, shelf support brackets having hooks fitting in said slots with said brackets having shelf-supporting bases to engage the front and rear members of said shelves,

said shelves being of rectangular shape having front and rear longitudinally extending members of generally square cross-sections, longitudinally extending slats spaced apart between said front and rear members, said front and rear members and said longitudinally extending slats being connected at their ends by transversely extending end members, said slats being narrower in width than said front and rear members, said end members extending below said front and rear members and said longitudinally extending slats to engage the shelf supporting bases of said brackets to prevent said shelves from sliding off said brackets.

4,134,629
PIVOTABLE SHELVING HAVING AN ASSOCIATED PIVOTABLE DOOR

George E. Hansen, Los Altos, Calif., assignor to Roger G. Holmes, San Lorenzo, Calif.

Filed Jul. 26, 1976, Ser. No. 708,905
Int. Cl.[2] A47B 46/00
U.S. Cl. 312—246 16 Claims



1. In a kitchen cabinet for supporting items and having a door structure for closing off access to the shelf structure:

shelf means for providing a generally horizontal platform for supporting items to be stored thereon;

shelf pivot means for connecting said shelf means to a support structure and for pivotably supporting said shelf means relative to the support structure and for pivoting of said shelf means outwardly and downwardly about a generally horizontal pivot axis of said shelf pivot means toward the user to a lower access position for permitting ready access thereto for the user;

door means for movement relative to said shelf means for closing off access to said shelf means when said shelf means is in the elevated storage position and for opening thereof to permit access to said shelf means when said shelf means is pivoted into said lower access position; and

door actuating means operatively associated with said shelf means and said door means for actuation of said door means in concert with pivoting movement of said shelf means between said storage and access positions for closing said door means over said shelf means when said shelf means is pivoted into said storage position and for opening said door means for access to said shelf means when said shelf means is pivoted into said access position.

4,134,630
PROCESS FOR REPAIRING LEAD-IN WIRES OF ELECTRIC LIGHT BULBS

James E. Hinson, Phenix City, Ala., assignor to Bulbex Corporation, Athens, Ga.

Filed May 25, 1978, Ser. No. 909,197
Int. Cl.[2] H01J 9/50
U.S. Cl. 316—2 23 Claims

1. A process for the repair of an inoperative first lead-in wire of a light bulb, said bulb having a base for electrically connecting said bulb to a source of electrical energy, and said base containing said first lead-in wire and having a permanently secured insulative web carrying an external electrical contact cap for electrically connecting said first lead-in wire to said source of electrical energy, comprising the following steps:

the step of removing a sufficient portion of said permanently secured insulative web from said base to permit external access to said inoperative first lead-in wire without removing said base from said bulb;

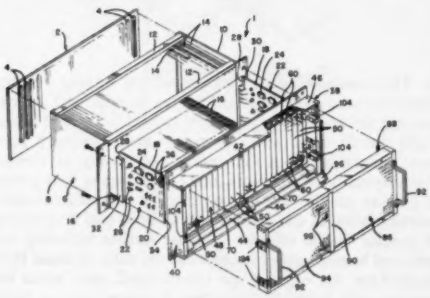
the step of repairing said inoperative first lead-in wire to provide a repaired first lead-in wire; and

the step of providing an insulative web in place of said removed portion of insulative web.

4,134,631
MODULAR PLUG BOARD SYSTEM

Jack S. Conrad; Richard F. Granitz, and Joseph L. Lockard, all of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sep. 13, 1977, Ser. No. 832,845
Int. Cl.[2] H01R 25/00; H05K 1/14
U.S. Cl. 339—17 M 5 Claims



1. A programmable interconnection system, comprising:

a cage,

a circuit board mounted removably to one end of said cage,

another end of said cage provided with a rear bay divided into a plurality of sections mounted removably to a frame portion of said cage,

a plurality of circuit cards on which are mounted active circuit devices interconnected by conductive circuits provided on said cards,

said cards extending between said circuit board and said rear bay within the confines of said cage,

first electrically conductive means for electrically and removably connecting said circuits of each said cards with a corresponding rear bay section,

second electrically conductive means for electrically and removably connecting said circuits of each said cards with said circuit board,

a front bay removably mounted on said frame portion directly opposite said rear bay,

said front bay provided with jumper interconnecting means therein for electrical connection to said rear bay sections,

said front bay and said jumper interconnecting means being removable as a unit from said frame thereby to electrically disconnect said jumper interconnecting means from said rear bay sections,

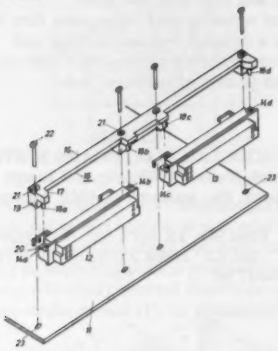
said rear bay sections being in alignment with corresponding circuit cards, and

said rear bay sections being individually removable from said frame thereby to expose a corresponding circuit card for removal thereof from said frame and for disconnecting said conductive circuits of the corresponding circuit card from said circuit board.

4,134,632
ATTACHING MEANS FOR CIRCUIT CARD CONNECTORS

Fritz J. Lindberg, Stockholm, and Uno S. Nilsson, Hägersten, both of Sweden, assignors to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Aug. 18, 1977, Ser. No. 825,569
Claims priority, application Sweden, Sep. 7, 1976, 7609843
Int. Cl.[2] H05K *1/12*
U.S. Cl. 339—17 LC **5 Claims**



1. The combination of two connectors having respective contact elements, a circuit card having an edge and means for mounting the connectors in precise spaced relation at the edge of said circuit card, said connectors each having a pair of spaced mounting holes, said means comprising an elongated bar overlying the connectors, said bar including four positioning pins at precise spacing engaged in respective pairs of mounting holes in said connectors to hold said connectors in said precise spaced relation, said bar further including heads positioned behind said connectors at the back surfaces thereof remote from the edge of the circuit card, said heads being provided with holes, and attachment means passing through the holes in said heads of the bar and engaged with said circuit card without passing through said connectors.

4,134,633
ELECTRICAL BUSWAY APPARATUS

Werner A. Krause, Plantsville, and Frank C. Johnston, Trumbull, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,227
Int. Cl.[2] H01R *13/60*
U.S. Cl. 339—22 B **2 Claims**

1. Electrical busway apparatus comprising, in combination:

A. a busway section including

(1) an elongated housing of rectangular cross-section,

(2) a plurality of elongated, flat bus bars,

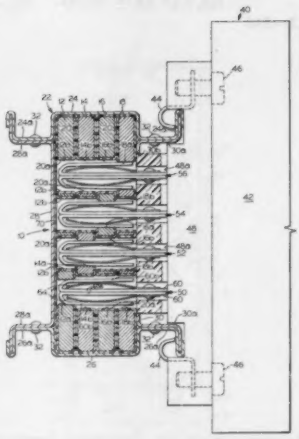
(3) an insulative coating applied to the exterior surfaces of said bus bars to permit their disposition in sandwiched relation within said housing,

(4) means forming a separate contact aperture in each said bus bar, the sidewalls of said contact apertures being free of insulation,

(5) means forming plural, enlarged clearance apertures in the portions of said bus bars in registry with each said contact aperture, said insulative coating being applied to the sidewalls of said clearance apertures, and

(6) means forming an opening in said housing to expose corresponding one ends of said registered contact and clearance apertures; and

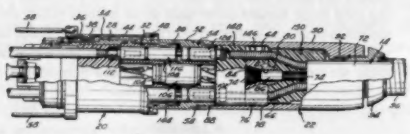
B. a bus plug mounted in registry with said housing opening, said bus plug including a plurality of stabs, each electrically associated with a different one of said bus bars, said stabs extending through said housing opening and said clearance apertures in unassociated bus bars for electrical contacting engagement with the sidewalls of said contact apertures in their associated bus bars, said bus plug stabs each include identical contact aperture sidewall engaging contact elements of lengths substantially corresponding to the combined thicknesses of said bus bars, whereby said stabs are capable of achieving electrical contacting engagement with said contact aperture sidewalls of their associated bus bars irrespective of which corresponding ends of said registered contact and clearance apertures are exposed by said housing opening.



4,134,634
EXPLOSION-PROOF AUTOMATIC RELEASE HELICOPTER TOW CONNECTOR

Robert Baur, Los Angeles, and Ralph Iversen, Granada Hills, both of Calif., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Sep. 12, 1977, Ser. No. 832,394
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 M **8 Claims**



1. A tow connector for connecting tension members for towing and for connecting electrical conductors so that a towed device is both physically drawn and electrically connected, said connector comprising:

a forward connector body and after connector body, said after connector body having connector pins thereon and having tow line securing means therein, said forward connector body having pin receptacles therein and having tension member connector means thereon;

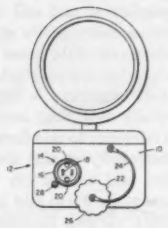
means for releaseably connecting said forward and said after connector bodies together, said releaseable connection means comprising locking lugs on one of said bodies engaging into a recess on the other of said bodies, and a release sleeve engaging against said locking lug to retain them in said recess for retaining said bodies together and for drawing away from said locking lugs to permit said locking lugs to be withdrawn from said recess to permit separation of said bodies.

4,134,635

CONNECTOR FOR WATERPROOF RECHARGEABLE LAMP

Thomas F. Roche, 21 W. Main St., Merrimac, Mass. 01860

Filed Dec. 1, 1977, Ser. No. 856,417
Int. Cl.[2] H01R 3/04
U.S. Cl. 339—117 R 8 Claims



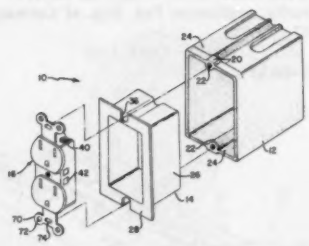
1. A connector assembly for a water proof housing for a rechargeable, battery-operated power supply comprising:
an electrical connector mounted on an exterior surface of said housing, by which power may be supplied to recharge said battery;
means for establishing a sealable perimeter against said surface and enclosing said connector;
the portion of said surface within said perimeter having at least one hole therethrough, through which gases may be vented from the interior of said housing to the exterior thereof during the battery recharging operation; and
means for providing a watertight seal against the exterior surface of the housing and enclosing the sealable perimeter, the means being removable to permit access to the electrical connector.

4,134,636

ELECTRICAL OUTLET AND UNDER PLATE ASSEMBLY

Joseph W. Kleinatland, 281 Willowview Dr., Akron, Ohio 44319, and Dale J. Lucore, 3382 S. Arlington Rd., Akron, Ohio 44312

Filed Apr. 18, 1977, Ser. No. 788,613
Int. Cl.[2] H02G 3/12
U.S. Cl. 339—122 R 2 Claims



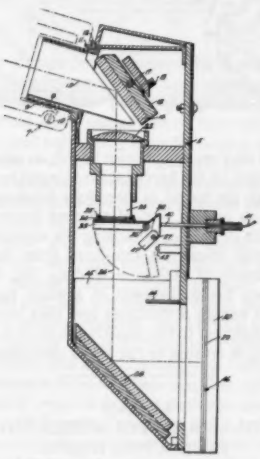
1. The combination of an electrical outlet with an extension plate wherein the outlet box has end walls and side walls, and the extension plate is a rigid molded plastic insulator member having a center flange portion sized for telescopic engagement with said outlet box to extend the effective length thereof, said center flange portion being a continuous wall defining an open center area in said plate, and said plate having a continuous peripheral portion for engaging a building surface when said outlet box is positioned in a hole in such surface, and said plate bridges over areas immediately adjacent the entire periphery of said outlet box; and outlet receptacle positioned in said outlet box, said center portion extending into said outlet box to cover and insulate terminal portions on said outlet receptacle from said outlet box; and
a strap metal securing strip engaging a side wall of said outlet box and having an elongate section outside the box and protruding longitudinally therebeyond and several positioning fingers extending into and engaging said outlet box wall on the inner surface thereof, and being insulated from any electrical contact means within said center flange portion.

4,134,637

COLPOSCOPE WITH PHOTOGRAPHIC ATTACHMENT

Fritz Leisegang, Leibnizstrasse 32, D-1000 Berlin 12, Fed. Rep. of Germany

Filed Mar. 15, 1977, Ser. No. 777,822
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1976, 7639305[U]
Int. Cl.[2] G02B 21/00
U.S. Cl. 350—19 6 Claims



1. In combination, a colposcope, a photographic attachment including a film cassette, and a light source,
said colposcope including two side-by-side occulars, an objective lens in line with each of said occulars, said lens and occulars defining a top view field of vision;
said light source being mounted on said colposcope on a reflective line perpendicular with said field of vision;
said photographic attachment including a tube and bushing means removably connecting the tube and said colposcope, said tube defining a predetermined line of sight parallel to said field of vision;
said photograph attachment defining a side view field of observation wherein a specimen can be observed;
said photographic attachment including two side-by-side adjustable reflex mirrors within said side view field of observation of said tube, whereby a bundle of light impinging upon the specimen is reflected and travels along a predetermined path of said colposcope and through said tube;
a pair of upper reflex mirrors included in said photographic attachment spanning said tube, at a predetermined angle with respect to said line of sight through said tube, said line of sight defining an angle of incidence with respect to said reflex mirrors and an optical axis of reflection;
two side-by-side objective field lenses arranged in perpendicular relation to said optical path; and a first and a second lower reflective mirror, each of said reflective mirrors being spaced from one of said two side-by-side objective field lenses and being arranged parallel thereto; and
a lower reflective mirror spaced from said two side-by-side objective field lenses and said relay objective lenses at a predetermined angle with respect to said optical path

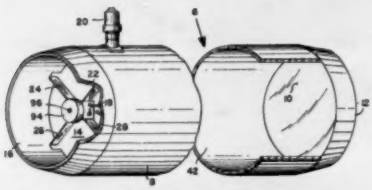
defining an angle of incidence and said film cassette being arranged in spanning relation and perpendicular to the angle of reflection of said lower reflex mirror.

4,134,638

LOW OBSCURATION SPIDER FOR SUPPORTING OPTICAL ELEMENT

Clyde O. Drauglis, Willow Grove, Pa., assignor to Edmund Scientific Company, Barrington, N.J.

Filed Sep. 2, 1977, Ser. No. 830,090
Int. Cl.[2] G02B *17/06, 23/06*
U.S. Cl. 350—49 **21 Claims**



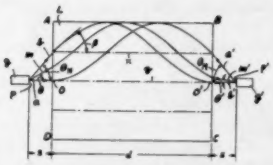
1. An optical instrument having a barrel, an objective mirror located at one end of the barrel and arranged to receive light directed through the barrel in directions substantially parallel to an optical axis and an optical element located within the barrel in the path of light approaching the objective mirror, in which said optical element is supported from the wall of the barrel by a plurality of radially extending, flat, flexible metal vanes, each vane being disposed in a plane parallel to said optical axis and having a thickness less than about **0.01"** in a direction perpendicular to the plane in which it is disposed, and said vanes being in tension in the radial direction.

4,134,639

OPTICAL PATH-LENGTH EQUALIZER WITH GRADED REFRACTIVE INDEX

Pietro Di Vita, Turin, Italy, assignor to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed May 3, 1977, Ser. No. 793,420
Claims priority, application Italy, May 10, 1976, 68141 A/76
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **5 Claims**



1. In an optical signal-transmission system, in combination:

two aligned light guides with confronting ends respectively emitting and collecting bundles of light rays whose limiting rays include a critical angle θ_M with a common centerline of said light guides in at least one longitudinal plane of symmetry thereof; and

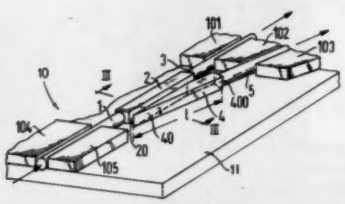
an equalizer between said light guides comprising a unitary transparent body with a refractive index varying symmetrically within said plane from said centerline outwardly, said body having an entrance face transverse to said centerline spaced by a distance s from the light-emitting end of one of said light guides and an exit face spaced by said distance s from the light-collecting end of the other of said light guides, the limiting rays leaving the center of said light-emitting end within said plane striking said entrance face at points spaced from said centerline by a middle distance $r_o = s \cdot \tan\theta_M$, said refractive index increasing progressively within said plane from said centerline outwardly over substantially said middle distance r_o and thereafter decreasing progressively to the periphery of said body, spaced from said centerline by a distance of $2r_o$, to an extent sufficient to deflect each of said limiting rays within said body back toward said centerline over a generally sinusoidal first path which ends substantially tangentially to said centerline at said exit face whereby each limiting ray continues substantially along said centerline to the light-collecting end of the other of said light guides whereas a central ray leaving said light-emitting end substantially along said centerline is deflected within said body over a generally sinusoidal second path longitudinally shifted with reference to said first path which ends at said exit face substantially at said distance r_o from said centerline whereby said central ray continues substantially at said critical angle θ_M to said light-collecting end, said refractive index varying throughout said body on each side of said centerline according to a substantially symmetrical function of distance from said centerline having an inversion point at said middle distance r_o whereby said first and second paths are substantially symmetrical about an axis spaced from said centerline by said distance r_o, the length of said body between said transverse faces being substantially equal to 3/2 times the distance between successive points of intersection of either of said paths with said axis.

4,134,640

OUTPUT/INPUT COUPLER FOR MULTI-MODE GLASS FIBERS

Franz Auracher, Munich, and Ralf Kersten, Rottach-Egern, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Mar. 31, 1977, Ser. No. 783,277
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614647
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.15 **13 Claims**



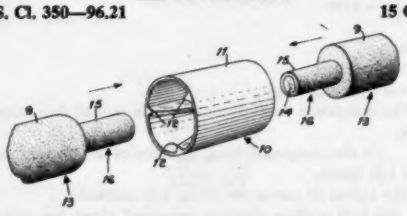
1. A coupler for use with individual multi-mode glass fibers to couple-out and couple-in a light signal to the individual glass fibers comprising a substrate, a main line having a pair of end faces and at least one flat surface therebetween, at least one branch line having an end face and a flat surface, said main line and each branch line being disposed on said substrate with the flat surface of the branch line facing a flat surface of the main line in spaced parallel relationship thereto, and portions on said substrate to form a guide groove adjacent each end face to hold an end of a fiber in optical contact with each end face.

4,134,641

SELF CENTERING CONNECTOR DESIGN

Charles K. Kao, and James E. Goell, both of Roanoke County, Va., assignors to International Telephone & Telegraph Corp., Nutley, N.J.

Filed May 17, 1977, Ser. No. 797,721
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.21 15 Claims



1. A connector member for an optical fiber of the type that includes a light transmissive core, and an outer layer of plastic material, said connector member comprising:

a rigid hollow tubular member having a predetermined outer surface and a central longitudinal axis; and

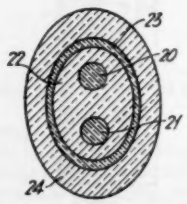
a plurality of inwardly directed protruding members fixed to said tubular member and terminating at innermost portions disposed in equidistant space relation about the tubular member, said innermost portions being equally spaced from the central axis of the tubular member for contacting the outer plastic layer of the optical fiber, whereby the core of the optical fiber is centered on the longitudinal axis of the tubular member.

4,134,642

OPTICAL FIBRE WITH INCREASED SECURITY

Felix P. Kapron, Richmond, and Frederick D. King, Smiths Falls, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 677,760, Apr. 16, 1976, abandoned. This application May 2, 1977, Ser. No. 793,082
Int. Cl.[2] G02B 5/14
U.S. Cl. 350—96.33 14 Claims



1. An optical fibre for a transmission system, comprising:

at least two spaced apart parallel light conducting cores, each core having a predetermined refractive index for independent passage of signals therethrough;

a first cladding layer surrounding all said cores and having a refractive index lower than said cores to provide optical isolation between said cores;

a light conducting layer over said first cladding layer and having a refractive index higher than said first cladding layer for passage of a monitor signal independently of said cores; and

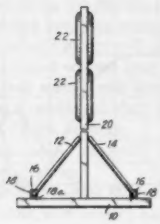
a second cladding layer over said light conducting layer and having a refractive index lower than said light conducting layer.

4,134,643

FOLDABLE ROAD REFLECTOR DEVICE

Nelly W. Lee, 911 Hawkins Ave., Lake Grove, N.Y. 11755

Filed Jun. 10, 1977, Ser. No. 805,273
Int. Cl.[2] G02D 5/12
U.S. Cl. 350—97 10 Claims



1. A road reflector device comprising, in combination: a base member; bearing means on said base member; two pivotable supporting arms held in said bearing means; said pivotable supporting arms being comprised of bent wire; spring means connected to said supporting arms for urging said arms toward an upper surface of said base member; said two arms being urged by said springs to pivot in opposite rotational directions; a vertical member held in standing position on said base member when abutted by said two arms on opposite sides of said vertical member; and light reflector means carried by said vertical member; said base member being a single one-piece plate-shaped member; said vertical member being detached from said base member and standing freely on said base member when in a vertical position, said vertical member standing on said base member free from being structurally connected to said base member, said arms abutting said vertical member at a substantial distance from said base member, said vertical member being freely removable from between said arms without disconnecting said vertical member from said base member, said arms being urged to pivot and contact the upper surface of said base member by said spring means after removal of said vertical member from between said arms, each arm being pivotally held in said bearing means at a substantial distance along the base member from the position of contact of said vertical member with said base member so that said arm forms substantially the hypotenuse of a right triangle having one arm along the base member and one arm along said vertical member; said arms being pivoted to lie against said base member when said vertical member is removed from between said arms; the triangular structure forming supporting means for said vertical member.

4,134,644

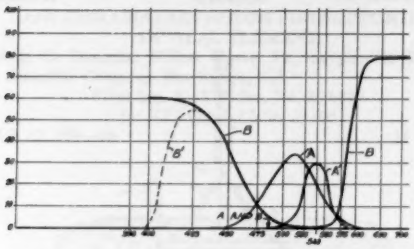
3D COLOR PICTURES WITH MULTICHROME FILTERS

Alvin M. Marks, 166-35 Ninth Ave., Whitestone, and Mortimer Marks, 166-25 Cryders La., Beechhurst, both of N.Y. 11357

Filed Jan. 10, 1977, Ser. No. 757,838
Int. Cl.[2] G02B 27/22
U.S. Cl. 350—132 7 Claims

1. In a system for presenting and viewing images in 3D color, means for presenting a first green color stereo image, said green color including the color yellow, and a second magenta color stereo image, said magenta color including the colors red and blue, complementary mutually extinguishing A and B filters, said first stereo image having only the green color wavelengths transmitted by the said A filter, and said second stereo image only the red-blue wavelengths transmitted by the said B filter, a spectacle frame in which said A and B filters are mounted, said A filter being a green colored sheet, said B filter a magenta colored sheet, whereby said first stereo colored image passes through said A filter in said frame, and not through said B filter in said frame, and said second stereo colored image passes through said B filter in said frame and not

through said A filter in said frame, said green A filter transmitting between 450 and 580 nm with a peak between 515 and 450 nm, the combination of said A and B filters having less than 1% transmittance at any wavelength from 400 nm to 700 nm,



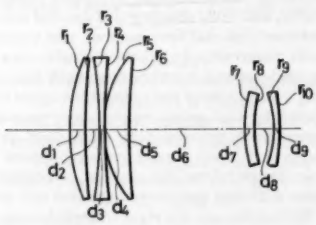
whereby interocular color suppression and ghosting is avoided, and whereby the brain of the observer synthesizes said first and second images and colors to form a single 3D image in full color.

4,134,645

MINIATURIZED TELEPHOTO CAMERA LENS

Takahiro Sugiyama; Toshifumi Kubota, and Rensuke Adachi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 25, 1977, Ser. No. 827,636
Claims priority, application Japan, Aug. 26, 1976, 51-101957
Int. Cl.[2] G02B 9/60
U.S. Cl. 350—216 **3 Claims**



1. A miniaturized telephoto camera lens assembly, comprising: in order, a first positive lens L_1, a second negative lens L_2, and a third positive meniscus lens L_3 each having a higher object side curvature, the first, second, and third lenses being arranged relatively close to one another, a fourth positive meniscus lens L_4 having a higher object side curvature, and a fifth negative meniscus lens L_5 having a higher object side curvature, the fourth lens being arranged relatively remote from the third lens and the fifth lens being arranged relatively close to the fourth lens, and the lens assembly satisfying the following conditions:

F = 100mm, f = 1:2.8, $\omega = \pm 10.2°$

L_1	$r_1 = 38.98$	$d_1 = 4.86$	$n_1/\nu_1 = 1.51821/65.0$
	$r_2 = 145.48$	$d_2 = 3.19$	
L_2	$r_3 = -112.72$	$d_3 = 1.68$	$n_2/\nu_2 = 1.80518/25.4$
	$r_4 = 209.73$	$d_4 = 0.08$	
L_3	$r_5 = 30.94$	$d_5 = 5.81$	$n_3\nu_3 = 1.55963/61.2$
	$r_6 = 134.14$	$d_6 = 28.84$	
L_4	$r_7 = 30.61$	$d_7 = 2.88$	$n_4/\nu_4 = 1.80518/25.4$
	$r_8 = 53.93$	$d_8 = 4.86$	

-continued

L_5	$r_9 = -20.54$	$d_9 = 1.26$	$n_5/\nu_5 = 1.80610/40.9$
	$r_{10} = -56.03$		

Backfocus = 35.52
$F_{1.2.3} = F/1.283 = 77.97$
$F_{1.2.3.4} = F/1.896 \cdot 52.73$
Petzval's sum = 0.170

wherein:

f is the f-number,

ω is the coverage angle,

F is the composite focal distance of the overall lens assembly,

$F_{1.2 \ldots i}$ is the composite focal distance of the first through the i-th lenses,

r_k is the radius of carvature of the k-th surface,

d_k is the k-th surface distance measured along the optical axis,

n_i is the refractive index of the i-th lens, and

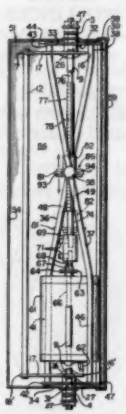
ν_i is the Abbe number of the i-th lens.

4,134,646

ROTATION CONTROL APPARATUS

Emil M. Petterborg, and Robert A. Wood, both of Sunnyvale, Calif., assignors to Power View Corporation, Sunnyvale, Calif.

Filed Dec. 6, 1976, Ser. No. 747,493
Int. Cl.[2] G02B 5/08; F16H 21/48
U.S. Cl. 350—289 **10 Claims**



1. An apparatus for controlling the rotation of an object supported on the apparatus, comprising:

(a) a stationary inner cage including spaced end plates held apart and interconnected by a plurality of elongated rods;

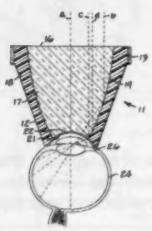
(b) a movable outer cage including spaced end plates journaled on the stationary inner cage and interconnected by a pair of elongated rods portions of which are inclined in opposite directions, said object to be rotated being supportable on said outer cage; and

(c) drive means mounted on said stationary inner cage and interconnecting the inclined portions of said pair of elongated rods of said outer cage whereby activation of said drive means causes rotation of said outer cage in relation to said inner cage.

4,134,647
CONTACT LENS FOR EXAMINING THE INTERIOR OF THE EYE

Arturo J. Ramos-Caldera, Calle "C", Residencias Guaribe, Apartamento 6-B Santa Rosa de Lima, Caracas, Venezuela

Filed Mar. 22, 1977, Ser. No. 780,079
Int. Cl.[2] A61B 3/10
U.S. Cl. 351—6 5 Claims

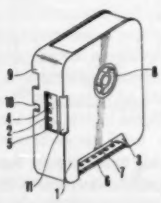


1. A contact lens for observing the fundus of the eye comprising a truncate paraboloidal mirror and a transparent objective surface shaped for close contact with the cornea of the eye, and wherein said objective surface defines the truncate end of said paraboloidal mirror.

4,134,648
MOTION PICTURE CAMERA

Ichiro Shimizu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 17, 1976, Ser. No. 724,453
Claims priority, application Japan, Sep. 23, 1975, 50/115046
Int. Cl.[2] G03B 31/02
U.S. Cl. 352—27 2 Claims



1. A sound motion picture camera for use with a sound film, comprising:

(a) a casing having:

a film chamber for receiving the film, said chamber having a picture image recording location for recording picture image information on the film and a sound recording location for recording sound information on the film; and an image gate being opened at a position opposite to the image recording location of the chamber;

(b) first feed means in said chamber engageable with the inserted film at said picture image recording location for intermittently transporting said film in a direction of said sound recording location along a film path of said image gate in said image recording location;

(c) sound recording means in said chamber positioned for co-operation with the inserted film at said sound recording location;

(d) second feed means in said chamber engageable with the inserted film at said sound recording location for transporting the film part at said sound recording means at a substantially constant speed, said second feed means having:

a capstan positioned within the sound recording location; and

a pinch roller positioned opposite to said capstan sandwiching the film path of said sound recording location;

(e) drive means for actuating said first and second feed means, said drive means including at least a motor rotating at a substantially constant speed;

(f) means for transmitting the driving power of said motor to said capstan, having first gear means functionally fixed on a rotating shaft of said motor and rotating integrally with the rotating shaft, and second gear means being engaged with said first gear means, said second gear means functionally fixed on a rotating shaft of said capstan and rotating integrally with the capstan;

(g) first elastic disc means integrally rotating with the first gear means; and

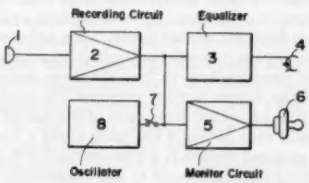
(h) second elastic disc means integrally rotating with the second gear means, said second elastic disc means being resiliently contacted with said first elastic disc means;

said first and second elastic disc means thus being arranged to absorb backlash that takes place between said first and second gear means so as to allow said capstan to be rotated by the driving power of said motor at approximately a constant velocity.

4,134,649
SOUND MOTION PICTURE CAMERA

Takeshi Suzuki, Okazaki; Hiroshi Hirata, and Takashi Kondo, both of Sakai, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 16, 1977, Ser. No. 777,987
Claims priority, application Japan, Mar. 26, 1976, 51/34010
Int. Cl.[2] G03B 1/60
U.S. Cl. 352—27 10 Claims



1. A sound motion picture camera for use with a sound film and for the recording of sound simultaneously with the photographing of an object, comprising:

means for recording an electric sound signal representative of said sound on said film;

an earphone;

means for applying a monitoring signal representative of said sound to said earphone;

means for generating an electric warning signal;

means for detecting exhaustion of said film due to the transportation thereof for photographing;

switching means responsive to said detecting means for applying said electric warning signal to said earphone upon detection of the exhaustion of said film by said detecting means;

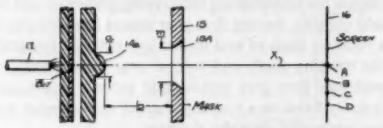
means for driving said camera for photographing; and means for periodically interrupting said electric warning signal in response to the driving of said camera.

4,134,650

DISTRIBUTED-OPTICAL MICROFICHE READER

Seymour Rosin, Massapequa Park, N.Y., assignor to Izon Corporation, Stamford, Conn.

Filed Mar. 4, 1977, Ser. No. 774,545
Int. Cl.² G03B *23/02, 21/06*
U.S. Cl. 353—27 R **6 Claims**



1. A reader for a distributed optical microfiche in which each page or document of recorded intelligence is constituted by a reduced scale image thereof dissected to form a pattern of dispersed bits, said reader comprising:

A. a viewing screen;

B. means to illuminate the bits in the recorded pattern on the microfiche;

C. a planar lens matrix formed by an array of equidistant identical lenslets having a predetermined aperture diameter, each lenslet being optically aligned with a respective microfiche bit to enlarge and project this bit onto a zone of said screen, every three directly adjacent lenslets in said array forming a triad in which the centers of the lenslets lie at the corners of an equilateral triangle; and

D. a planar apertured melding mask interposed between the lens matrix and the screen and having an array of identical openings corresponding to the array of lenslets and optically aligned therewith, the peaks of said lenslets in said array lying in a common plane that is spaced a predetermined distance from the obverse face of the mask, the diameter of each mask opening, the diameter of the aperture of the associated lenslet and said distance having respective values resulting in three illuminated screen zones associated with each triad of directly adjacent lenslets, which zones are in partially overlapping relationship to a degree producing substantially equal light-intensities within the overlapping and non-overlapping regions therein, thereby uniformly illuminating the screen image, said triad having a triple point equidistant from all three lenslets and a double point midway between a pair of adjacent lenslets, the diameter of each mask opening and its distance from the related lenslet being adjusted so that the screen portion opposite the triple point receives 33⅓% of its light intensity from each of the three lenslets in the triad and the screen portion opposite the double point receives 50% of its light from each of the pair of adjacent lenslets, said triad having a test point along a line joining a pair of adjacent lenslets at a position spaced from one of these lenslets a distance equal to said triple point distance, the portion of said screen opposite said test point receiving 33⅓% of its light from said one of said lenslets and 66⅔% from the other of said lenslets in the pair thereof.

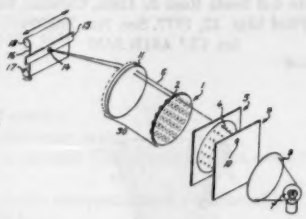
4,134,651

METHOD OF MAKING AN ASSEMBLY

Charles J. England, Smallfield, England, assignor to The Monotype Corporation Limited, Redhill, England

Filed Aug. 22, 1977, Ser. No. 826,708
Claims priority, application United Kingdom, Aug. 31, 1976, 36066/76
Int. Cl.² G03B *17/08;* B29D *11/00*
U.S. Cl. 354—17 **17 Claims**

10. An assembly comprising a support plate with an array of lenslets made from optically refractive material mounted thereon, the support plate being substantially optically transparent at least in the regions adjacent the lenslets, the said lenslets each being fixed along one surface to a surface portion of said support plate with its optical axis extending through said support plate, by means of an optically transparent adhesive cured by the application of electromagnetic radiation, each said surface portion of said support plate being perpendicular to the optical axis of its adjacent lenslet and said adhesive being provided between said one surface of each said lenslet and each said surface portion of said support plate.

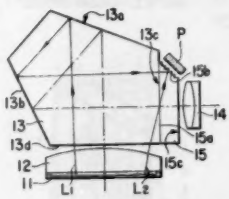


4,134,652

LIGHT MEASURING ARRANGEMENT FOR A SINGLE LENS REFLEX CAMERA

Takehiko Kiyohara, Zama; Youichi Okuno; Tokuichi Tunekawa, both of Kanagawa, and Teiji Hashimoto, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 495,258, Aug. 6, 1974, abandoned. This application Jan. 21, 1977, Ser. No. 760,960
Claims priority, application Japan, Aug. 7, 1973, 48-88649
Int. Cl.² G03B *7/08*
U.S. Cl. 354—23 R **9 Claims**



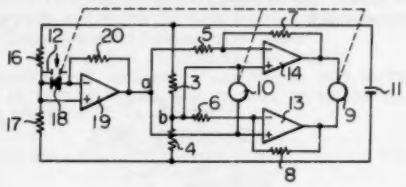
1. In a light measuring arrangement for a single lens reflex camera having an objective lens and a finder optical system including a focusing screen on which said objective lens forms an image of an object area, said focusing screen having front and rear portions, a pentaprism type reflection means having a bottom surface, two roof reflecting surfaces, a front reflecting surface, an exit surface and a substantially L-shaped cutout at a portion of an upper edge on the side of the exit surface of the pentaprism type reflection means to define a first and a second light-permeable surface connected optically to the front reflecting surface and to the bottom surface respectively, said pentaprism type reflection means being disposed with its bottom surface connected optically to said focusing screen, and an eyepiece connected optically to the exit surface of said pentaprism type reflection means, said arrangement also comprising a single light-receiving means connected optically to both first and second light-permeable surfaces of said L-shaped cutout provided in said pentaprism type reflection means for receiving both a light beam radiated mainly from the front portion of said focusing screen, reflected by the pentaprism type reflection means and then radiated from the first light-permeable surface of said L-shaped cutout and a light beam radiated mainly from the rear portion of said focusing screen and, without reflection by said pentaprism type of reflection means radiated from the second light-permeable surface of said L-shaped cutout.

4,134,653

SERVOAMPLIFIER IN AN AUTOMATIC DIAPHRAGM CONTROLLING DEVICE OF A CAMERA

Yasuo Ishiguro, and Tomio Kurosu, both of Tokyo, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed May 10, 1977, Ser. No. 795,630
Claims priority, application Japan, May 14, 1976, 51-60184[U]; Jun. 1, 1976, 51-63994
Int. Cl.[2] G03B 7/10
U.S. Cl. 354—42 2 Claims



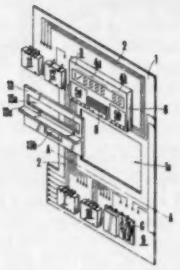
1. Servoamplifier for an automatic diaphragm controlling device of a camera having an electric source, a servomotor having a single driving coil for driving the objective lens diaphragm of said camera, a scene light indicating voltage generating circuit energized by said electric source and adapted to generate a scene light indicating voltage indicative of the scene brightness but controlled so as to be varied as a function of the aperture of said diaphragm, a reference voltage generating circuit energized by said electric source, said driving coil being so connected to said scene light indicating voltage generating circuit and said reference voltage generating circuit that said servomotor drives said diaphragm in response to the voltage differential between the output voltages of said scene light indicating voltage generating circuit and said reference voltage generating circuit thereby permitting the proper exposure to be obtained when said voltage differential reaches zero, wherein the improvement comprises a first operational amplifier, a second operational amplifier, a first resistor and a second resistor, the inverted input terminal of said first operational amplifier being connected to the non-inverted input terminal of said second operational amplifier through said first resistor while the non-inverted input terminal of said first operational amplifier is connected to the inverted input terminal of said second operational amplifier through said second resistor, the junction of said first resistor and the non-inverted input terminal of said second operational amplifier being connected to the output terminal of said reference voltage generating circuit while the junction of the non-inverted input terminal of said first operational amplifier and said second resistor is connected to the output terminal of said scene light indicating voltage generating circuit, a negative feedback resistor being connected between the output terminal and the inverted input terminal of each of said first and said second operational amplifiers while said driving coil of said servomotor is connected between the output terminals of said first and second operational amplifiers, said scene light indicating voltage generating circuit comprising a voltage dividing circuit consisting of a pair of series connected resistors, a photogalvanic element located behind said objective lens diaphragm so as to receive scene light therethrough and an operational amplifier having a negative feedback resistor, said photogalvanic element being connected between the junction of said pair of resistors and the inverted input terminal of said operational amplifier, the non-inverted input terminal of said operational amplifier being connected to said junction of said pair of resistors while the output terminal of said operational amplifier is connected to the junction between the non-inverted input terminal of said first operational amplifier and said second resistor.

4,134,654

PRINTED CIRCUIT UNIT FOR A CAMERA

Hiroyashu Murakami, Tokyo; Tadashi Ito, Yokohama; Fumio Ito, Yokohama; Nobuaki Sakurada, Yokohama; Masaharu Kawamura, Kawasaki, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 1, 1976, Ser. No. 746,297
Claims priority, application Japan, Dec. 2, 1975, 50-144159
Int. Cl.[2] G03B 7/00
U.S. Cl. 354—60 R 35 Claims



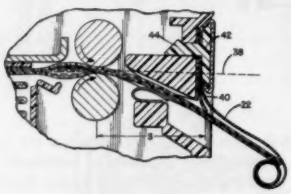
1. For a camera which is provided with:
photo-taking lens system,
view finder optical means, and
aperture frame means to define a photographing picture frame,
a printed circuit unit comprising:
(A) photo-sensing means to measure the brightness of an object to be photographed by said camera, and to produce an electric signal corresponding to the object brightness,
(B) exposure operation circuit means to determine a proper exposure value based on the output signal of said photo-sensing means, and to produce an electric signal corresponding to a proper exposure value,
(C) a display means to electro-optically display the proper exposure value information based on the output signal from said exposure operation circuit means,
(D) electrically insulating flexible circuit supporting means; said supporting means being adapted to be bent into a configuration to fit in a desired space within said camera and having an opening with a size at least equal to the size of the photographing picture frame defined by said aperture frame means, and
(E) electrically conductive means being carried on said flexible supporting means,
said photo-sensing means, said exposure operation circuit means and said display means being carried on said flexible supporting means, and said photo-sensing means and said display means being electrically connected to said exposure operation circuit means through said electrically conductive means, and
said supporting means being constructed so that:
said photo-sensing means is placed at a position to receive a light beam from said object through at least a part of said view finder optical means,
said display means is placed at a position having the display informtion light beam display said proper exposure value information and impinge into at least a part of said view finder optical means, and
said opening of the supporting means matches with said photographing picture frame defined by said aperture frame means, and is mounted in a camera so at least to utilize a restricted space near said aperture frame means.

4,134,655

FILM UNIT DEFLECTION SYSTEM FOR SELF DEVELOPING CAMERA

Harvey S. Friedman, Natick, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 9, 1976, Ser. No. 721,992
Int. Cl.[2] G03B *17/52*
U.S. Cl. 354—86 7 Claims



1. In a self-developing camera for use with a cassette holding a plurality of film units in stacked relation with the foremost film unit covered by a dark slide having a greater stiffness than said film units, said camera including means for advancing the dark slide and the film units one at a time from a first end of the cassette in a first direction, said dark slide having diagonally-trimmed leading corners at each side of a straight leading edge, and each film unit including a supply of photo-processing composition, means for controlling the distribution of said composition within each film unit over a photosensitive portion thereof, comprising in combination:

a housing proximate to said first end of said cassette and having a film exit slot;

a pair of pressure applying rollers mounted on said housing intermediate said cassette first end and said exit slot, said rollers forming a nip that is spaced from said exit slot in a direction transverse to the plane of said film when said film is advanced in said first direction and said rollers being adapted to advance said film units and said dark slide to said exit slot and to initiate and spread of said composition from said supply over said photosensitive portion;

fixed guide means extending between said rollers and said exit slot along the path of advance of a film unit and a dark slide;

a flexible deflection member located at the end of said fixed guide means adjacent said exit slot, said flexible deflection member being disposed to intercept said film units as they leave said fixed guide means and to introduce a local longitudinal bending in said film units during their advancement past said member;

said flexible deflection member being sufficiently stiff so that in said deflected position it defines a film processing path portion lying between said rollers and said exit slot such that said local longitudinal bending in said film unit distributes a uniformly thick layer of said composition over all of the photosensitive portions of said film unit while being sufficiently flexible to allow the advance of said dark slide along said processing path with less longitudinal bending than said film unit;

said flexible deflection member comprising a strip of a resilient plastic material having one of its longitudinally extending edges fixed to said housing and the other of its longitudinally extending edges free and disposed to engage said film units and said dark slide;

said strip having a pair of open slits formed therein and extending from said free edge toward said fixed edge, and said slits being located to coincide with the intersections of said trimmed corners with said leading edge to offer a reduced initial resistance to the advange of said dark slide past said resilient strip; and

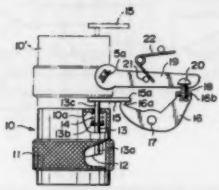
said spacing between said rollers and said flexible member being sufficiently large to present a relatively low resistance to the advance of said dark slide along said film processing path.

4,134,656

MEANS FOR TRANSMITTING INFORMATION FROM LENS BARREL TO CAMERA BODY

Takeshi Yoshino, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Sep. 22, 1977, Ser. No. 835,740
Claims priority, application Japan, Sep. 22, 1976, 51-128046[U]
Int. Cl.[2] G03B *13/20, 13/02*
U.S. Cl. 354—163 5 Claims



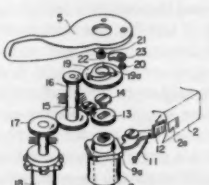
1. A means for transmitting information from a lens barrel to a camera body in a collapsible mount type camera, said means comprising an axially movable pin which is connected with an operating member in the lens barrel and is moved axially by a distance corresponding to the information input by said operating member, said axially movable pin having a rear end projecting rearward out of the lens barrel, and an intermediate member provided in the camera body which is in abutting engagement with the rear end of said pin for transmitting the axial movement of said pin to a mechanism in the camera body, wherein the improvement comprises a radially extending lever fixed to the rear end of said pin, said radially extending lever extending beyond the periphery of said lens barrel, said intermediate member abutting on the front face of said radially extending lever outside the lens barrel, whereby the lens barrel is retracted into the camera body together with the pin and the radially extending lever without being obstructed by said intermediate member.

4,134,657

DEVICE FOR INDICATING THE ADVANCING OF FILM IN A CAMERA BEING TAKEN UP OR REWOUND

Katsuhiko Nomura, Kawagoe, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1977, Ser. No. 830,286
Claims priority, application Japan, Sep. 3, 1976, 51-118538[U]
Int. Cl.[2] G03B *1/00*
U.S. Cl. 354—212 3 Claims



1. In a camera employing a roll of film and having a film take-up spool mounted on a spool shaft, a device for indicating

the advancing of the film being taken up or rewound comprising:

a friction member rotatably mounted on said spool shaft, said friction member rotating with said spool shaft only when film is wound around said friction member, and

means viewable from the outside of the camera for indicating the rotation of said friction member.

4,134,658

SHUTTER RELEASE SYSTEM FOR A CAMERA

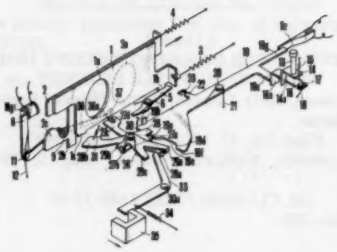
Toyostosi Suzuki, Tokyo; Takashi Uchiyama; Noriaki Sanada, both of Yokohama; Tetsuya Taguchi; Ryoichi Suzuki, both of Kawasaki, and Michio Hirohata, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 18, 1976, Ser. No. 742,939

Claims priority, application Japan, Nov. 20, 1975, 50/139682; Dec. 18, 1975, 50/151409; Dec. 18, 1975, 50/151410; Dec. 24, 1975, 50/155669

Int. Cl.² G03B *17/38*

U.S. Cl. 354—266 **3 Claims**



1. A camera having an electric shutter including a means to initiate shutter opening action, an electro-magnet to control a shutter closing action by output of an exposure time control circuit, and a power source battery located in a battery chamber, comprising:

a detection means including an electro-magnet for detecting the power supply from the power source battery;

a blocking means operatively associated with said detection means to block the action of said release means when the failure of the power supply is detected;

a cover for the battery chamber;

a change-over means which can be operated by said cover to release said blocking means, and

a mechanical delay means which is shifted in operative assciation with said change-over means to such a position as delaying the shutter closing time for a prescribed period of time.

4,134,659

CAMERA SHUTTER CONTROL MEANS

Ichiro Nemoto; Tadashi Nakagawa, and Mitsuo Koyama, all of Yotsukaido, Japan, assignors to Seiko Koki Kabushiki Kaisha, Japan

Filed Apr. 13, 1977, Ser. No. 787,204

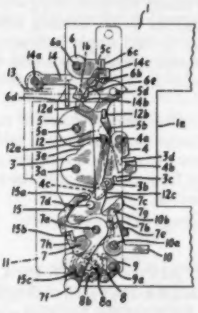
Claims priority, application Japan, Apr. 14, 1976, 51-47264[U]

Int. Cl.² G03B *17/38*

U.S. Cl. 354—267 **7 Claims**

1. A camera shutter control mechanism for controlling a shutter opening comprising: an opening member movable in an opening direction for opening the shutter opening to start an exposure; a closing member movable in a closing direction for closing the shutter opening to terminate the exposure; an opening pawl for releasably locking said opening member in a charged position in readiness for movement in said opening direction; a closing pawl for releasably locking said closing member in a charged position in readiness for movement in said closing direction; an operating member for operating said opening pawl so as to release said opening member to undergo movement in said opening direction; an interlock lever arranged to be operated by said opening member during movement thereof in said opening direction; an adjustable fulcrum lever operable when in an operative position to be driven by said interlock lever for operating said closing pawl so as to release said closing member to undergo movement in said closing direction; means for adjusting the operative phase of said fulcrum lever with respect to said closing pawl within a range of operative positions corresponding to a range of exposure periods and for selectively effecting movement of said fulcrum lever to an inoperative position; a control lever operable when said fulcrum lever is in said inoperative position for operating said closing pawl so as to release said closing member to undergo movement in said closing direction; and an engagement pawl for releasably engaging with said control lever to lock said control lever in a charged position and arranged so as to disengage from said control lever upon movement of said opening member in said opening direction.

5. A camera shutter control mechanism for controlling a shutter opening comprising: an opening member movable in an opening direction for opening the shutter opening to start an exposure; a closing member movable in a closing direction for closing the shutter opening to terminate the exposure; an opening pawl for releasably locking said opening member in a charged position in readiness for movement in said opening direction; a closing pawl for releasably locking said closing



member in a charged position in readiness for movement in said closing direction; an operating member for operating said opening pawl so as to release said opening member to undergo movement in said opening direction; a first system for actuating said closing pawl so as to release said closing member to undergo movement in said closing direction to control relatively short exposure periods, said first system comprising an adjustably positionable fulcrum lever positionable within a predetermined range of operating positions corresponding to a range of relatively short exposure periods and positionable outside said predetermined range and engageable with said closing pawl only when positioned within said predetermined range, and means operable during the course of movement of said opening member in said opening direction for effecting movement of said fulcrum lever to thereby actuate said closing pawl to release said closing member; and a second system for actuating said closing pawl so as to release said closing member to undergo movement in said closing direction to control relatively long exposure periods, said second system comprising a pivotable control lever pivotable in one direction to actuate said closing pawl to release said closing member, an engagement pawl for releasably engaging with said control lever to lock said control lever in a charged position, and means operable during the course of movement of said opening member in said opening direction whenever said fulcrum lever is positioned outside said predetermined range for disengaging said engagement pawl from said control lever thereby releas-

ing said control lever to pivot in said one direction to actuate said closing pawl.

4,134,660

SELF TIMER OF CAMERA

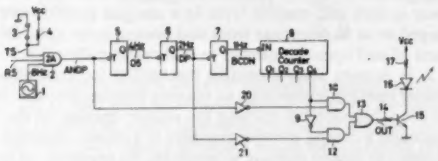
Nobuaki Sakurada; Tadashi Ito, both of Yokohama; Hiroyasu Murakami, Tokyo; Masayoshi Yamamichi; Masayuki Suzuki, both of Kawasaki, and Nobuhiko Shinoda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1977, Ser. No. 811,205

Claims priority, application Japan, Jul. 7, 1976, 51-80541; Sep. 9, 1976, 51-108303

Int. Cl.² G03B *17/18;* G08B *5/38*

U.S. Cl. 354—289 **18 Claims**



1. An electrical self-timer for a camera comprising:

(a) a single indicator which indicates duration of a self-timing operation of said self-timer;

(b) pulse forming means for generating a pulse train having a first frequency, the pulse forming means being operatively connected to said single indicator to energize the indicator at frequency responsive to the pulse train and in synchronism with the start of the self-timing operation; and

(c) frequency changing means connected to said pulse forming means to change the frequency of said pulse train from said first frequency to a second frequency, which is different from the first frequency, prior to the termination of the self timing operation.

4,134,661

EXPOSURE INDICATING DEVICE IN A SINGLE LENS REFLEX CAMERA HAVING A BUILT-IN TTL EXPOSURE METER

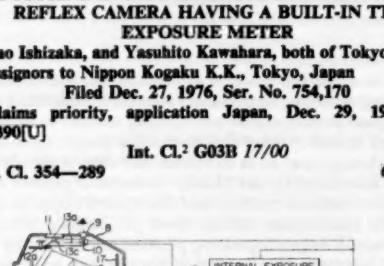
Sunao Ishizaka, and Yasuhito Kawahara, both of Tokyo, Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Dec. 27, 1976, Ser. No. 754,170

Claims priority, application Japan, Dec. 29, 1975, 50-180390[U]

Int. Cl.² G03B *17/00*

U.S. Cl. 354—289 **6 Claims**



1. In a single lens reflex camera having a body and a built-in TTL exposure meter: shutter means provided in a manner movable by external manipulation between a position to intercept inverse incident light from an eye-piece of a view finder into the view finder interior and a position retracted from said interception position; at least one photographic information carrying means; a light introducing window provided in a camera body to illuminate said photographic information carrying means with external light; means for leading said photographic information illuminated by external light through said light introducing window into the view finder eye-piece; and a light emitting element provided within the camera body to emit light in response to an output from an exposure measurement circuit and to indicate propriety of the exposure state, the improvement comprising:

(a) an indication window provided in the camera body for leading light emitted from said light emitting element outside the camera body;

(b) guide means to guide said emitted light in the direction substantially identical with that for illuminating said photographic information carrying means with said external light, and in a manner to illuminate said photographic information carrying means with said emitting element; and

(c) first change-over means interlocked with said shutter means to be changed over between a first position to connect said exposure measurement circuit to said light emitting element when said shutter means is at the light intercepting position and a second position to disconnect said exposure measurement circuit from said light emitting element when said shutter means is at its retracted position.

4,134,662

COUPLING DEVICE IN A STROBOSCOPE HOLDER WITH A REMOVABLE BRACKET

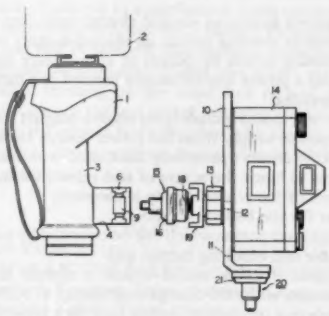
Michio Kawazoe, 30-11 5 chome, Narita, Higashi, Suginami-ku, Tokyo, Japan

Filed Aug. 15, 1977, Ser. No. 824,349

Claims priority, application Japan, May 9, 1977, 52-058925[U]

Int. Cl.² G03B *17/00;* A44B *19/00*

U.S. Cl. 354—293 **1 Claim**



1. In a stroboscope holder with a removable bracket wherein the bracket is attached to the stroboscope holder through a coupling device, said coupling device comprising:

(a) a retainer mounted on the stroboscope holder including

a pair of opposed slots made in a retainer body,

a joint bar with one end inserted into one of the slots and with another end inserted into the other of that, which engages with the slots,

a U-shaped controlling member attached to the two ends of the joint bar, an outside of said U-shaped controlling member protruding out from the retainer body,

a push plate attached to the U-shaped controlling member, and

a spring with one end fixed to the retainer body and with another end fixed to the push plate,

(b) a nut with a bolt for setting a camera which is attached to a bottom part of the bracket,

(c) a first insertion being mounted on a bottom part of the bracket through the nut with a bolt including

a first insertion body with a recess which engages with the joint bar,

a guide slope for leading said joint bar into said recess, said guide slope communicating with the recess, and a coupling bolt which is coupled to the nut with a bolt, and,

(d) a second insertion being mounted on a side part of the bracket including a second insertion body with a recess which engages with the joint bar,

a guide slope for leading said joint bar into said recess, said guide slope communicating with the recess, characterized in that an operator can, easily and quickly, attach a bracket to a stroboscope holder, or detach the former to the latter, and besides, by using selectively one of the two insertions according to the situation of a camera he can hold, easily a camera together with a stroboscope, in the case of using a camera vertically as well as in the case of using a camera horizontally.

4,134,663

METHOD AND APPARATUS FOR FEEDING REPLENISHMENT CHEMICALS IN FILM PROCESSORS

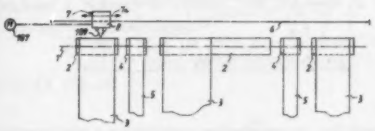
Erwin Laar, Taufkirchen, and Friedrich Ganser, Feldkirchen-W., Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Fed. Rep. of Germany

Filed Dec. 16, 1976, Ser. No. 751,487

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557253

Int. Cl.² G03D *3/06*

U.S. Cl. 354—298 **15 Claims**



1. A method of feeding replenishment chemicals to a liquid bath in a photographic processor wherein webs of identical or different widths are transported lengthwise through the bath at a variable speed and such webs include at least one photosensitive web, comprising a first step of generating first signals at a frequency corresponding to the rate of transport of successive unit lengths of the webs through said bath, said first step comprising storing a portion of a web ahead of said bath, changing the length of said stored portion at a frequency which varies proportionally with changes in the speed of transport of the respective web through said bath, and generating said first signals at said last mentioned frequency; a second step of generating at regular intervals second signals whose number is identical with the number of photosensitive webs and each of which persists for a period of time proportional to the width of the monitored photosensitive web and a third step of feeding replenishment chemicals to said bath in response to each generation of a first signal during the persistence of a second signal.

4,134,664

METHOD OF AND APPARATUS FOR MONITORING HOT DEVELOPING TREATMENT

Tadashi Morokuma, and Kenichi Oinoue, both of Tokyo, Japan, assignors to Olympus Optical Co. Ltd., Tokyo, Japan

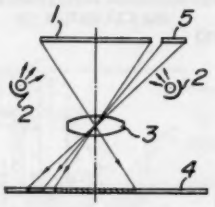
Filed Jun. 16, 1977, Ser. No. 807,340

Claims priority, application Japan, Sep. 24, 1976, 51-113757

Int. Cl.² H05B *1/00*

U.S. Cl. 354—298 **10 Claims**

1. A method for monitoring concentration of a hot developing treatment comprising photoelectrically monitoring a developing image of at least one portion of those image regions of a photographed hot development film which are simultaneously being hot developed by a hot developing heating body while hot developing said regions by said heating body, and stopping said hot developing treatment when the developed concentration of said portion reaches to a predetermined concentration, photoelectrically monitoring a developing image of a reflecting plate image portion of those image regions of said photographed heat development film which are simultaneously being developed by said hot developing heating body while hot developing said regions by said heating body, said



photoelectrically monitoring step being carried out with the aid of a light reflected by said heating body, and stopping said hot developing treatment when said reflecting plate image portion produces a visible color having a correct developed concentration.

4,134,665

SINGLE BATH-TYPE FILM DEVELOPING DEVICE

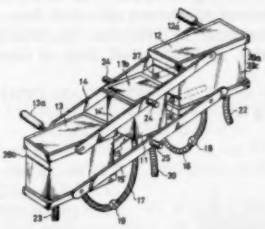
Yamato Wada, Soka, and Shin Ishikawa, Saitama, both of Japan, assignors to Somar Manufacturing Company Limited, Tokyo, Japan

Filed Jan. 25, 1978, Ser. No. 872,337

Claims priority, application Japan, Feb. 7, 1977, 52-12617[U]; Feb. 7, 1977, 52/12618[U]; May 16, 1977, 52-61462[U]

Int. Cl.² G03D *3/06*

U.S. Cl. 354—299 **6 Claims**



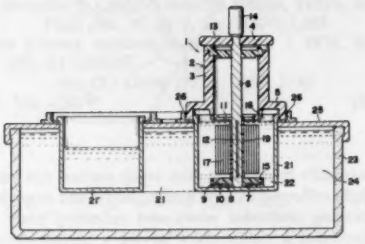
1. A single bath-type film developing device, comprising: a support member, a first tank mounted on said support member and containing a quantity of developing and fixing liquid, a second tank mounted on said support member and being adapted for receiving film to be developed through an open top end thereof, means on said second tank for closing and sealing said open end, a third tank mounted on said support member and containing a quantity of rinsing water, a fist conduit interconnecting said first and second tanks and having a first valve thereon, a second conduit interconnecting said second and third tanks and having a second valve therein, said first and second tanks each being mounted for pivotal movement for respectively altering the level of liquid and water therein relative to said second tank, whereby the film may be developed as said second tank is filled with the liquid from said first tank through said first conduit upon opening said first valve while the liquid level is above said second tank, and whereby the developed film may be rinsed as the liquid is emptied from said second tank back into said first tank and the water fills said second tank respectively through said conduits upon opening said first valve and then said second valve while the water level is above said second tank.

4,134,666

FILM DEVELOPING DEVICE

Shuichi Kikuchi, Chiba, Japan, assignor to Medica Co., Ltd., Tokyo, Japan

Filed Oct. 31, 1977, Ser. No. 847,473
Claims priority, application Japan, Nov. 1, 1976, 51-130474
Int. Cl.[2] G03D *3/04*
U.S. Cl. 354—313 7 Claims



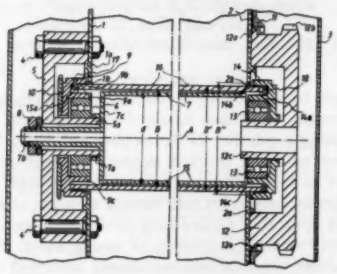
1. A device for developing a photographed film by rolling up and down said film in a liquid developer comprising a hollow body opened at the lower end thereof, a rotary shaft axially extending through said hollow body to be slidable thereto and having a length long enough to extend beyond the lower free end of said hollow body, and a disc attached to the lower end of said rotary shaft and adapted to close said lower end of said hollow body when said rotary shaft is raised to a predetermined level.

4,134,667

DRUM ASSEMBLY FOR ELECTROSTATIC COPIER

Günther Schnall, Eching; Erich Schlick, Riedmoos, and Hanns Blöchl, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert AG, Leverkusen, Fed. Rep. of Germany

Filed Mar. 25, 1977, Ser. No. 781,454
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1976, 2615617
Int. Cl.[2] G03G *15/00;* B21B *31/08;* G03G *21/00*
U.S. Cl. 355—3 DR 14 Claims



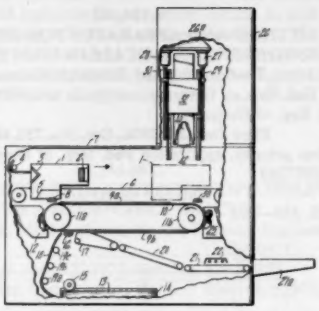
1. A drum assembly for an electrostatic copier having a stationary frame, said assembly comprising a cylindrically tubular drum having an outer drum surface, an inner drum diameter, and a pair of drum ends; a light-sensitive coating on said outer surface; a pair of rings respectively snugly engageable with said drum ends, each of said rings having an inner engaging surface which tapers axially in a direction away from the respective other ring and engages around the respective drum end in contact with said outer drum surface; means supporting said rings on said frame for rotation about a common axis with said drum snugly engaged between said rings; and a support sleeve secured to said frame generally between said rings and on said axis and having an outer sleeve diameter smaller than said inner drum diameter, said sleeve being out of contact and radially spaced from said drum when the same is snugly engaged between said rings.

4,134,668

APPARATUS FOR IMAGE REPRODUCTION AND IMAGE CREATION

Richard J. Coburn, West Hartford, Conn., assignor to Coburn Technology, Inc., East Hartford, Conn.

Continuation-in-part of Ser. No. 620,947, Oct. 9, 1975, abandoned. This application Apr. 18, 1977, Ser. No. 788,353
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 R 15 Claims



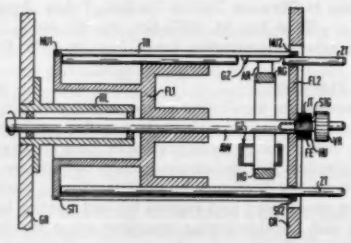
12. Apparatus for image creation comprising a photoreceptor for receiving an electrostatic charge and for forming an electrostatic image upon being exposed to a light image, means for developing said electrostatic image and for transferring the developed image to paper and fixing it thereon, means for transmitting a light image to said photoreceptor, said means being in effective light transmitting relationship with said photoreceptor and including a cathode ray tube light source, and control means for said cathode ray tube to cause selective de-energization of the cathode ray tube beam to form a black on white tube face image for transmission to said photoreceptor.

4,134,669

DRUM SUPPORT FOR ELECTROSTATIC PRINTER

Wilhelm Reitner, Taufkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 17, 1977, Ser. No. 842,608
Claims priority, application Fed. Rep. of Germany, Apr. 18, 1977, 2717055
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—3 DR 14 Claims



1. A mounting assembly for supporting a tubular drum used

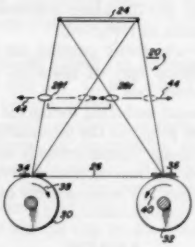
as an intermediate carrier in an electrostatic copier supporting the drum on a drive shaft comprising: a first drum locating radially projecting flange fixed on said drive shaft provided with a groove adjacent its outer peripheral rim into which a mating configuration groove located at one axial end of the drum can be inserted, a second drum locating radially projecting flange axially movably received on said drive shaft and centered thereon and provided with a groove adjacent its radial peripheral edge into which a mating groove configuration located at the other end of the drum can be inserted, a shaft end extension member detachable from a shaft end adjacent the second drum locating flange, spring means associated with the shaft end extension, said spring means effective, when the shaft end extension is attached to the shaft end adjacent the second flange to spring urge the second flange axially towards the first flange and to urge the second flange into contact with the drum and the drum into contact with the first flange.

4,134,670

HIGH CAPACITY PHOTOCOPY OPTICAL SCANNING SYSTEM

Richard A. Spinelli, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 18, 1977, Ser. No. 798,224
Int. Cl.[2] G03G *15/28, 15/32;* G03B *27/44*
U.S. Cl. 355—8 **7 Claims**



1. An optical system for scanning an object in forward and return directions and projecting composite ordered images of said object during scanning in both directions, including:

an object station

an image plane

a first projection lens and a second projection lens disposed in a common plane between said object station and said image plane, said first and second lenses forming twin optical paths between said object station and said image plane,

means to effect relative reciprocating scanning movement between said object station and said lenses to project twin moving images of said object at said image plane,

a first photoreceptor surface and a second photoreceptor surface disposed in said image plane for movement therein in opposite directions, said first photoreceptor surface moving in synchronism with said moving images when said reciprocating scanning movement is in said forward direction, said second photoreceptor surface moving in synchronism with said moving images when said reciprocating scanning movement is in said return direction,

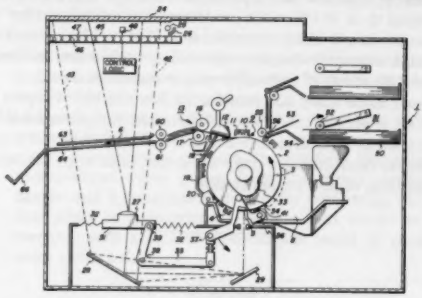
whereby ordered images of said object are alternately formed on said first and second photoreceptor surfaces during scanning in said forward and return directions respectively.

4,134,671

INTERSECTING OPTICAL AND COPY SHEET PATH METHOD AND APPARATUS

William H. Leonard, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1977, Ser. No. 781,080
Int. Cl.[2] G03G *15/28*
U.S. Cl. 355—8 **19 Claims**



11. A copier of the type having photoreceptor means for recording latent images corresponding to light images, lens systems means for projecting light images from an object plane to the photoreceptor means along an optical path, developer means for making toned images corresponding to the latent images recorded by the photoreceptor means and transfer means for transferring toned images from the photoreceptor means to copy sheets, the improvement being sheet transport apparatus comprising:

tray means for supporting a stack of copy sheets;

feeding means for separating the sheets and serially delivering them to a first transport means for conveying the sheets to the transfer means; and

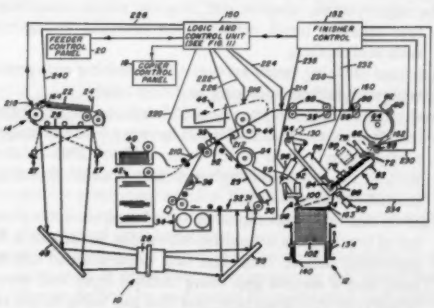
second transport means for conveying sheets from the transfer means through said optical path to an output location.

4,134,672

COPIER FINISHER FOR AN ELECTROGRAPHIC REPRODUCING DEVICE

Leroy E. Burlew, Clyde; Michael G. Reid, and William E. Hunt, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 671,753, Mar. 30, 1976, abandoned. This application Mar. 25, 1977, Ser. No. 781,395
Int. Cl.[2] G03G *15/00;* B65H *39/02;* B65G *57/00*
U.S. Cl. 355—14 **10 Claims**



1. Reproduction apparatus comprising:

electrographic apparatus for producing a stream of copies forming a set of a preselected first number of copies;

intermediate copy assembling means for receiving copies from said electrographic apparatus and for assembling

said copies into a booklet equal to or less than a predetermined second number of copies;

a copy output station having first and second stacking locations;

transport means for transporting booklets along a path from said assembling means to said output station;

said transport means being operable in a first mode when said preselected first number of copies in a copy set are equal to or less than the predetermined second number of copies in a booklet assembled in said assembling means to stack successive booklets alternately at said first and second locations of said copy output station; and in a

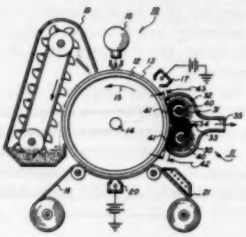
second mode when said preselected first number of copies in a set is greater than the predetermined second number of copies in a booklet to stack successive booklets of copy sheets constituting a copy set at the same copy stacking location of said output station.

4,134,673

DUAL BRUSH CLEANING APPARATUS

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 27, 1975, Ser. No. 553,759
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—15 **10 Claims**



6. An electrostatographic reproducing apparatus comprising:

an imaging surface;

means for forming an electrostatic image on said surface;

means for developing said image to render it visible;

means for transferring said visible image to a sheet of final support material; and

means for cleaning said surface;

the improvement wherein said cleaning means comprises:

a first cleaning brush arranged for brushing engagement with said surface;

a second cleaning brush arranged for brushing engagement with said surface following said first brush;

said second brush having a desired brush to imaging surface interference and said first brush having a brush to imaging surface interference which is from about 20% to about 80% of the brush to imaging surface interference of said second cleaning brush;

each of said brushes comprising a core member and a plurality of brush fibers extending outwardly therefrom, a first gap being defined from said first brush core to said surface, and a second gap being defined from said second brush core to said surface, said first gap being larger than said second gap and said fibers of said first brush and said fibers of said second brush having substantially the same length;

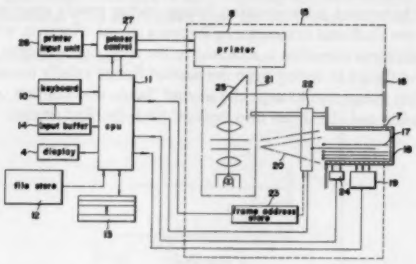
whereby said first cleaning brush only partially cleans said surface to thereby divide the cleaning between said first and second brushes.

4,134,674

MICROFICHE RETRIEVAL SYSTEM WITH A PRINTER OPERABLE IN FOUR MODES

Mikio Ohsaki, Kashiwara; Hiroshi Kamada, Nara; Kohichi Kakimoto, Nara; Hitoshi Suzuki, Kobe, and Mitsuhiro Hakaridani, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Nov. 16, 1976, Ser. No. 742,232
Claims priority, application Japan, Nov. 17, 1975, 50-138473
Int. Cl.[2] G03B *27/52, 27/50*
U.S. Cl. 355—43 **2 Claims**



1. A microimage display, retrieval, and printing system comprising:

keyboard means for selectively retrieving a microimage to be retrieved from a plurality of microimage frames having predetermined frame addresses;

memory means for storing the total number of microimage frames retrieved by said keyboard means during a given viewing interval and the frame addresses of each of said microimage frames so retrieved;

printer means for selectively printing out information contained in a selected one, or plurality, of said retrieved microimage frames; and

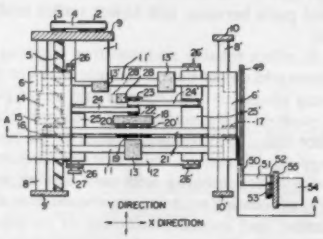
printer control means including means for constraining said printer means to print out the information in each of said retrieved microimage frames stored in said memory means during said viewing interval irrespective of whether said microimage frames are consecutively disposed.

4,134,675

FILM POSITIONING MECHANISM FOR A MICROFILM CAMERA

Shigenori Oosake; Makoto Murakoshi, and Tsuneo Komura, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 29, 1977, Ser. No. 811,355
Claims priority, application Japan, Jul. 1, 1976, 51-77016
Int. Cl.[2] G03B *27/44*
U.S. Cl. 355—54 **6 Claims**



1. A film positioning mechanism for a microfilm camera, comprising:

(a) a platen movable in a first direction and including means for selectively gripping a strip of film disposed thereon

and means for guiding said film strip for movement across the platen in said first direction,

(b) a rotary member mounted on the platen,

(c) brake means mounted on the platen for selectively engaging the rotary member,

(d) reversible rotational drive means mounted externally of the platen and drivingly engaged with the rotary member,

(e) a film advance roller mounted on the platen in driving engagement with the film strip and in driven engagement with the rotary member, and

(f) means for selectively locking the platen against movement, whereby when the film strip is gripped, the brake means engaged, and the platen unlocked, the rotational drive means moves the platen and film strip in said first direction via the rotary member mounting, and when the film strip is released, the brake means disengaged, and the platen locked, the rotational drive means moves the film strip across the platen in said first direction via the rotary member and the film advance roller.

4,134,676

REPROGRAPHY PROCESS: COLOR-COPYING WITH SUBLIMABLE DYES

Wolfgang Mehl, Geneva, Switzerland, assignor to Sublistatic Holding S.A., Glaris, Switzerland

Filed Jul. 5, 1977, Ser. No. 813,159
Claims priority, application Switzerland, Jul. 9, 1976, 8810/76
Int. Cl.[2] G01J *3/40*; D06P *5/00*
U.S. Cl. 355—77 **10 Claims**

1. Process for color-copying a colored original onto a final support damageable by repeated heatings between 130 and 230° C. which involves the color selections of said original by photocopying and developing each of said color selections with dry developers, characterized by the fact that said developers

(a) contain dyestuffs which are sublimable or vaporizable between 130 and 230° C. and which correspond to the photocopied color selection,

(b) that the dyestuffs contained in these copies are successively transferred by superposing them in registration onto an intermediary support, in order to reconstitute the inverse color image of the original, and

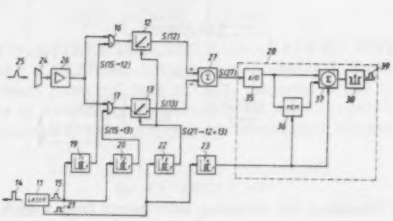
(c) that said intermediate image is rightened by transferring it in only one heating-step on the final support.

4,134,677

CLOUD ALTITUDE MEASURING APPARATUS

Bernt Ling; Anders Persson, and Sven-Erik Söderström, all of Vasteras, Sweden, assignors to ASEA Aktiebolag, Vasteras, Sweden

Filed Sep. 8, 1977, Ser. No. 831,539
Claims priority, application Sweden, Sep. 9, 1976, 7609943
Int. Cl.[2] G01C *3/08*
U.S. Cl. 356—5 **5 Claims**



1. A cloud altitude measuring means for detecting the existence of and the distance to a cloud, said means comprising:

(a) a light emitter to emit a series of light pulses and to trigger reference pulses for producing delayed pulses at consecutive time intervals in steps of increasing altitude within the measuring range of the said measuring means;

(b) a light receiving means to receive said light pulses reflected from a cloud;

(c) a plurality of integrators for receiving the output signal of the said light receiving means, said integrators being activated to receive said output signals from the receiver at separate time intervals relative to each emitted light pulse, said signals comprising reflected light pulse plus noise or only noise;

(d) a signal summation device to receive the output signal from each of the said integrators and determine for each series of light pulses the difference between the signals received in the said integrators; and

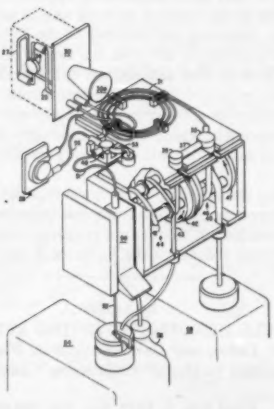
(e) a signal processing circuit to receive the output signal of the said signal summation device, said signal processing circuit comprising a memory for storing a first series of measurement value pulses from the signal summation device and a comparison device for comparing the said first series of measurement value pulses stored in said memory with a second time delayed series of measurement value pulses.

4,134,678

AUTOMATIC BLOOD ANALYSIS APPARATUS AND METHOD

Leslie J. Brown, Chestnut Hill; Bruno DeGironimo, Billerica; Charles F. Mountain, Cambridge; Richard B. Stevens, Somerville, and Fernando M. Vasconcelos, Lowell, all of Mass., assignors to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Mar. 16, 1977, Ser. No. 778,045
Int. Cl.[2] G01N *33/16*
U.S. Cl. 356—39 **18 Claims**



1. An apparatus for analyzing and digitally displaying a plurality of parameters of blood comprising

means for aspirating and simultaneously mixing a sample of blood with a diluent,

means for hemolyzing said mixture,

means for generating spectral lines, said means being servo-controlled so as to maintain the light intensity output of said spectral lines constant,

means for measuring for more than two absorbances of said mixture at at least four wavelengths in the visible spectrum as defined by said means for generating said spectral lines, including means of maintaining said mixture at a constant temperature during said measurement,

means for calculating said plurality of parameters based on said measured absorbances,

means for automatically displaying in digital form one of said calculated parameters, and

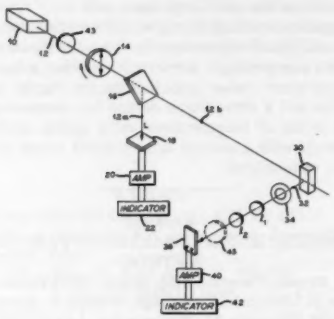
means for displaying one at a time the remaining calculated parameters responsive to operator intervention.

4,134,679

DETERMINING THE VOLUME AND THE VOLUME DISTRIBUTION OF SUSPENDED SMALL PARTICLES

Alan L. Wertheimer, North Wales, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Nov. 5, 1976, Ser. No. 739,365
Int. Cl.² G01N *15/02, 21/00, 21/26*
U.S. Cl. 356—336 **22 Claims**



7. The method of determining for a sample of suspended particles the volume distribution of suspended particles in a particular size range, comprising the steps of:

directing at said sample an incident beam of light, the wavelength of said light beam being approximately twice the diameter of the average particle size in said range;

separately detecting the intensity of the light flux scattered by said particles at 90° from the axis of said incident light beam in both first and second orthogonal polarizations, said first polarization being perpendicular to the plane of observation as defined by the axis of said incident beam and the point at which the scattered light is being detected and said second polarization being parallel to said plane; and

subtracting the intensity of the light flux detected as having said second polarization from that detected as having the first polarization to obtain a resulting value proportional to the total volume of the particles in said size range.

4,134,680

VEHICLE HEADLIGHT TESTING APPARATUS

Lee Hunter, Ladue, and David A. Senften, Florissant, both of Mo., assignors to Hunter Engineering Company, Bridgeton, Mo.

Filed Feb. 7, 1977, Ser. No. 766,041
Int. Cl.² G01J *1/04, 1/46*
U.S. Cl. 356—121 **12 Claims**

1. In headlight testing apparatus for vehicle headlights in which the vehicle front and rear wheels are placed on a work surface, the combination of:

(A) calibration means connected to and located in the plane of rotation of a rear wheel;

(B) headlight testing means positioned ahead of the vehicle wheels and at the side of the vehicle to be in view of said calibration means, and including

(1) a cabinet having a condensing lens mounted to align with said calibration means,

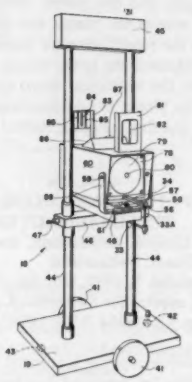
(2) a target indicia mounted in said cabinet and spaced from said lens,

(3) an array of photocells arranged around said target indicia with certain photocells spaced vertically above and below said target indicia, and others being spaced horizontally to the right and left of said target indicia, said target indicia being located on the focal axis of said condensing lens;

(C) sighting means carried by said cabinet in position to view said calibration means;

(D) support means for said cabinet including means to adjust the cabinet about horizontal and vertical pivot axes in cooperation with said calibration means to align the axis of said condensing lens substantially parallel with the plane of rotation of said rear wheel and with the work surface;

(E) an array of position indicator lamps corresponding with the vertical and horizontal orientation of the vehicle headlight beam; and



(F) circuit connections between said array of photocells and said indicator lamps, whereby said lamps are lit selectively or together in response to activation of said photocells by a vehicle headlight and adjustment of said cabinet,

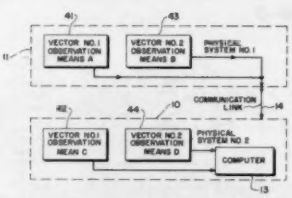
(1) said circuit connections including means to display the intensity of the vehicle low beam headlight as a voltage, means to store the voltage representative of the maximum intensity of the low beam headlight, and means to compare the stored voltage with the voltage of the actual low beam headlight intensity at locations of said photocells on the horizontal axis.

4,134,681

METHOD OF DETERMINING RELATIVE ORIENTATION OF PHYSICAL SYSTEMS

Frank J. Elmer, Spring Lake Heights, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 5, 1976, Ser. No. 701,918
Int. Cl.² G01B *11/26*
U.S. Cl. 356—152 **4 Claims**



1. A method for obtaining information from which an attitude matrix can be derived which is representative of the relationship of the coordinate systems of at least two separate physical systems comprising

sensing first and second beam vectors the apparent direction of which can be sensed at all of said physical systems,

actively measuring at one of said physical systems the direc-

tional components of said first beam vector in the coordinate system of said one physical system,

actively measuring at another of said physical systems the directional components of said first beam vector in the coordinate system of said other physical system, said measuring being accomplished simultaneously with the preceding measuring step,

actively measuring at said one physical system the directional components of said second beam vector in the coordinate system of said one physical system,

actively measuring at said other physical system the directional components of said second beam vector in the coordinate system of said other physical system, said measuring being accomplished simultaneously with the immediately preceding step,

communicating from both of said physical systems data representative of the measurements at said physical systems to a central processing means, and

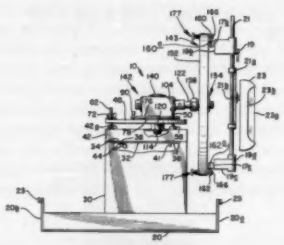
developing said attitude matrix from data derived from both of said physical systems.

4,134,682

WHEEL MIRROR CALIBRATING DEVICE

Walter R. Calk, 2545 Pine Bluff Dr., Dallas, Tex. 75228

Filed Nov. 19, 1976, Ser. No. 743,305
Int. Cl.[2] G01B *11/27, 11/275*
U.S. Cl. 356—155 **15 Claims**



1. A mirror alignment device for aligning mirrors used on wheel alignment equipment said mirrors having support structure with adjustable button pads adapted to be attached to the rim of a wheel on a vehicle comprising: means to project an image toward the mirror; a screen arranged to receive the reflected image; means to mark the position of the image on the screen; shaft support means; a shaft rotatably supported by said shaft support means; means to level said shaft support means; a frame secured to said shaft in a perpendicular plane to said shaft; support means secured to said frame for securing said mirror to said frame in a position perpendicular to said shaft, said support means having a lip adapted to receive the button pads on said mirrors; and adjustment means adapted to move said support means horizontally relative to said frame.

4,134,683

MULTISPECTRAL IMAGING AND ANALYSIS SYSTEM

Alexander F. H. Goetz, Altadena, and Frederick P. Landauer, Jr., South Pasadena, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 5, 1976, Ser. No. 664,091
Int. Cl.[2] G01J *3/48*
U.S. Cl. 356—407 **8 Claims**

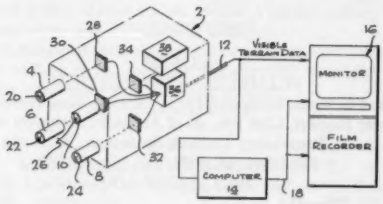
1. A system for receiving and analyzing incident radiation reflected from the earth's surface in real time, which system is suitable for geographic surveying from airborne vehicles, said system comprising:

imaging means for receiving said incident radiation, said imaging means including:

a plurality of detector arrays maintained in optically stacked registration, said detector arrays each including an array of charge coupled devices wherein said charge coupled devices of each said array are maintained in registration with corresponding devices in every other array, said arrays providing detector signals indicative of radiation incident thereon,

optical means for permitting only incident radiation having different preselected wavelengths to be incident on each of said detector arrays; and

normalizing circuit means for normalizing the dark current offset and the inherent gain of each said charge coupled device in said detector arrays;



data processing means for analyzing said detector signals applied thereto in accordance with preselected algorithms peculiar to the spectral reflectance characteristics of selected materials for identifying said selected materials; said processing means providing data signals; and

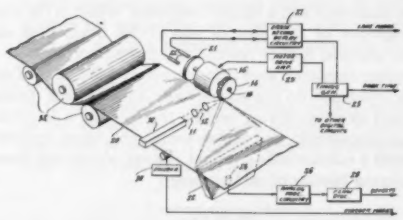
display means for receiving said data signals and detector signals for concurrently displaying said detector signals as an image of the earth's surface indicating the location of said selected materials.

4,134,684

REPEAT DEFECT DETECTOR SYSTEM

Paul C. Jette, Bethel, Conn., assignor to Intex Corp., Norwalk, Conn.

Filed Jan. 18, 1977, Ser. No. 760,279
Int. Cl.[2] G01N *21/32, 21/16*
U.S. Cl. 356—430 **7 Claims**



1. A repeat defect detection system for detecting repetitive flaws on predetermined areas of moving web of material being examined, comprising in combination

(a) a source of radiation,

(b) scanning means for scanning said source of radiation in a predetermined scan path over the web of material being examined,

(c) detector means positioned for receiving radiation applied by said source from the material being examined and generating signals in response to the intensity of radiation applied thereto,

(d) flaw discriminator means coupled to said detector means for passing flaw signals of predetermined characteristics in accordance with the requirements of said discriminator means,

(e) lane means for dividing the web of material being examined into predetermined lane areas along the length of travel of the web and means for generating lane signals

representing said lane areas for flaw signal processing purposes, and

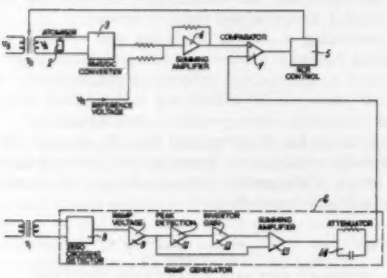
(f) settable recirculating processing means coupled to said flaw discriminator means and said lane signals for providing flaw signal matrix coordinator outputs indicative of lane number versus downweb position of each new flaw passed by said discriminator means, said processing means having means for locking out individual lanes with a predetermined high data rate until such predetermined high data rate disappears for a predetermined time interval.

4,134,685

FLAMELESS ATOMIZATION

Edward G. Egan, Mulgrave; Ian S. Jackson, Glen Waverley, and Peter Bennett, Glen Iris, all of Australia, assignors to Varian Techtron Proprietary Limited, Springvale, Australia

Filed Dec. 16, 1976, Ser. No. 751,761
Int. Cl.[2] G01J *3/30*
U.S. Cl. 356—312 **11 Claims**



1. Chemical analysis apparatus including; an atomizer for receiving a sample to be analysed; a heater circuit which includes said atomizer and is connectable to an electrical power source so that said atomizer is heated by resistance heating, the total electrical resistance of said circuit being the sum of the atomizer resistance and a further resistance which is the electrical resistance of that part of said circuit other than said atomizer, and said further resistance is preselected relative to said atomizer resistance such that operational variations of said atomizer resistance do not substantially affect power dissipation in said atomizer during heating thereof; and a feed-back system connectable to said power source and being operative to maintain a substantially constant voltage across said heater circuit during heating of said atomizer.

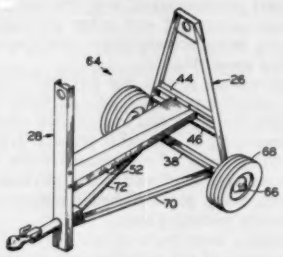
4,134,686

PORTABLE CEMENT MIXER

Hans Hauser, and Jon A. Violet, both of Fredericktown, Ohio, assignors to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Sep. 14, 1977, Ser. No. 833,086
Int. Cl.[2] B28C *5/18*
U.S. Cl. 366—47 **8 Claims**

1. A portable cement mixer comprising a first end frame having two angular struts converging in an upwardly direction, a bracket connecting the upper ends of said angular struts, a cross strut connecting intermediate portions of said angular struts, a second end frame comprising a single upright member, a transverse strut connecting a central portion of said cross strut and an intermediate portion of said upright member, a drum yoke supported by an upper end of said upright member and said bracket, axle means carried by lower end portions of said angular struts and extending outwardly from said angular struts in opposite directions, a pair of wheels rotatably mounted on said axle means, a lower end of said upright member being substantially in the same plane as the lower peripheries of said wheels when said yoke is substantially horizontal.

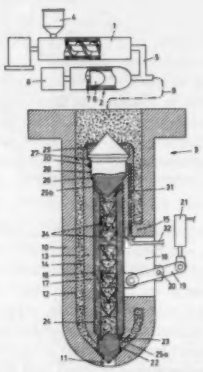


4,134,687

CONTROL OF PLASTIC INJECTION

Helmut Eckardt, Hilchenbach-Allenbach, Germany, assignor to Schloemann-Siemag AG, Düsseldorf, Germany

Filed May 24, 1977, Ser. No. 800,055
Claims priority, application Fed. Rep. of Germany, May 24, 1976, 2623308
Int. Cl.[2] B29B *1/06*; B29F *1/02*
U.S. Cl. 366—76 **14 Claims**



1. Injection molding apparatus for the injection molding of bodies consisting of a foamed porous thermoplastic core and a non-foamed dense thermoplastic skin, by injecting foaming and non-foaming thermoplastic material into a hollow-molding tool comprising:

(a) an injection head having an inlet opening for receiving a stream of non-foamed thermoplastic material during the injection operation, and an outlet opening,

(b) an annular canal within the injection head, said canal being ring-shaped in cross section and having an outlet opening and an inlet opening connected to the inlet opening of the injection head,

(c) a central bore within and co-axial with the annular canal, the central bore having an inlet opening, an outlet opening, and a mixing chamber between the inlet and outlet openings of the central bore,

(d) means for connecting the inlet opening of the central bore to the inlet opening of the injection head,

(e) a pipe line carrying a foaming agent and having an outlet opening communicating with the central bore between the mixing chamber and the inlet opening of the central bore and having an inlet opening,

(f) means slidable axially within the central bore for selec-

tively connecting and disconnecting the outlet opening of the pipe line with the central bore,

(g) means for mixing the thermoplastic material and foaming agent within the mixing chamber,

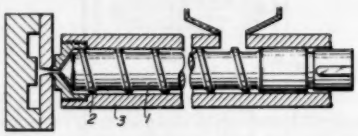
(h) means for connecting and disconnecting the outlet openings of the annular canal and central bore to the outlet opening of the injection head.

4,134,688

THERMOSETTING RESIN INJECTION MOLDING MACHINE AND METHOD

Masayoshi Horie, Tokyo, and Kikuto Yamazaki, Yokohama, both of Japan, assignors to Sumitomo Bakelite Company Limited, Tokyo, Japan

Filed Dec. 19, 1975, Ser. No. 642,325
Claims priority, application Japan, Dec. 21, 1974, 49-146320
Int. Cl.[2] B29B *1/06*
U.S. Cl. 366—81 **14 Claims**



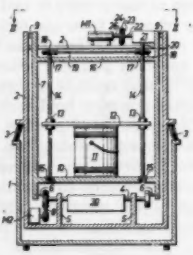
1. A screw device for a thermosetting resin injection molding machine, wherein said screw device is placed in a heating cylinder having an injection nozzle coaxially thereof of said heating cylinder and having one end on the side of the injection nozzle terminated into a kneading barrier, and the ratio of the cross sectional area cut at right angles to the flights of a spiral resin passage defined by the inner surface of the heating cylinder and the adjacent screw flights to the cross sectional area of an annular resin passage defined between said barrier and the inner surface of the heating cylinder is 0.3 to 0.7.

4,134,689

MIXING APPARATUS

Börge Ahrenskou-Sörensen, Hägersten, Sweden, assignor to Svenska Skandex AB, Stockholm, Sweden

Filed May 5, 1977, Ser. No. 794,144
Int. Cl.[2] B01F *11/00*
U.S. Cl. 366—110 **5 Claims**



1. In an apparatus for mixing liquid or pulverous material by shaking, including a table having a support surface, vibratory motion producing means connected to said table, and clamping means having a cross-member for clamping a receptacle to the table, said receptacle containing the materials to be mixed, the improvement comprising:

at least two screws extending perpendicularly to and upwardly from the support surface of said table, said screws being located to straddle the receptacle and being rotatably mounted relative to the table, and axially fixed relative to the table;

a nut on each screw;

said nuts being fixed on said cross-member;

transmission means connecting said screws for synchronous rotational movement;

an electric motor arranged to drive said transmission means;

and wherein said vibratory motion producing means includes:

an inner frame supporting said table; an intermediate frame disposed about said inner frame and adapted to support said electric motor;

linking means pivotably connecting the upper part of said intermediate frame to the upper part of said inner frame;

a first pulley driven by the motor; a second pulley connected to said transmission means;

an endless belt connecting said first and second pulleys;

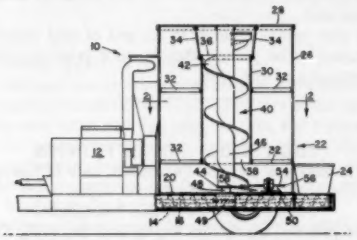
said pulleys being mounted substantially coaxially with the pivot axes of said linking means.

4,134,690

MIXER BLADE FOR A MIXER TANK

Harold R. Lindstrom, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Apr. 6, 1978, Ser. No. 893,854
Int. Cl.[2] B01F *15/02*
U.S. Cl. 366—266 **15 Claims**



1. For a mixer tank with a floor, an upright cylindrically shaped sidewall, and a central shaft carried for rotation within said tank on the axis thereof, a mixer blade assembly comprising:

a radially extending arm member including an inner radial portion for supporting said member with respect to the shaft for rotation therewith in a substantially horizontal plane; and

an extension member freely mounted about a vertical pivot on the arm member and including a portion supporting it on the vertical pivot so that it swings in a substantially horizontal plane and is retained thereby in close but vertically offset relation to the floor.

4,134,691

PRINTING HEAD

Arthur L. Matschke, Westport, Conn., assignor to Matschke General Research Company, Inc., Westport, Conn.

Continuation of Ser. No. 646,626, Jan. 5, 1976, abandoned. This application Jul. 14, 1977, Ser. No. 815,718
Int. Cl.[2] B41J *3/12*
U.S. Cl. 400—124 **13 Claims**

1. An electromagnet assembly for a dot matrix print head comprising:

an armature;

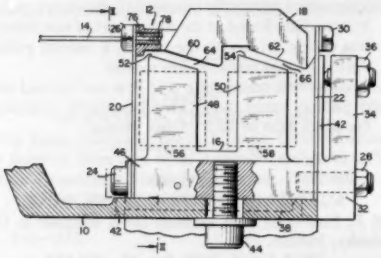
flexure means secured to the end of said armature and supporting same for movement from a rest position to a printing position and back without angular change during movement;

a single, generally U-shaped magnetizable core member having a base and a pair of legs extending toward said armature, the ends of said legs forming a first pair of pole faces;

said flexure means also being secured to the respective ends of said base;

said pole faces being adjacent said armature and each forming an identical acute angle in the range of 7 to 26 degrees with the axis thereof;

a second pair of magnetizable pole faces on said armature and at the same angle to said axis as said first of pole faces and defining therebetween a pair of closable air gaps;



coil means on each leg of said core member, energizing of said coil means creating a magnetic field between said pairs of pole faces and moving said armature to close said gaps; and

print wire means secured to an end of said armature and adapted to be pushed thereby to a printing position on energizing of said coils.

4,134,692

HIGH SPEED IMPACT PRINTER

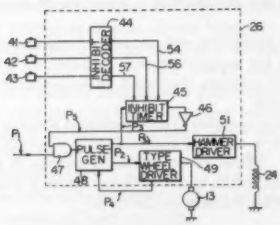
Takami Suzuki, and Takashi Fukushima, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1977, Ser. No. 806,145

Claims priority, application Japan, Jun. 14, 1976, 51-68699

Int. Cl.[2] B41J *7/92*

U.S. Cl. 400—144.2 **8 Claims**



1. A printing apparatus comprising:

a type wheel including a rotary hub, a plurality of circumferentially spaced resilient arms radially extending from the hub and a plurality of type elements provided at end portions of the arms respectively;

type selection means for rotating the type wheel so that a selected type element occupies a printing position;

a printing hammer;

hammer drive means for driving the printing hammer to engage with and move the selected type element against paper for printing; and

selection inhibit means for inhibiting the type selection means while the hammer is in engagement with the selected type element;

the hammer drive means comprising means for generating an electrical hammer drive signal to initiate driving of the hammer, the selection inhibit means comprising inhibit pulse generator means for generating an inhibit pulse having a predetermined duration in response to the hammer drive signal, the inhibit pulse inhibiting the type selection means for said duration;

the selection inhibit means being constructed to predetermine said duration of the inhibit pulse in accordance with a variable printing parameter of the printing apparatus.

4,134,693

RESILIENT RIBBON CARTRIDGES FOR BUSINESS MACHINES

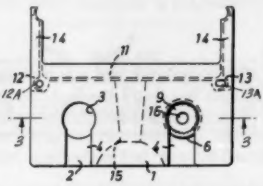
John D. Crickmore, and Ernest R. Radford, both of Sidcup, England, assignors to Walter Grafton & Son Limited, London, England

Filed May 10, 1977, Ser. No. 795,591

Claims priority, application United Kingdom, May 21, 1976, 21224/76

Int. Cl.[2] B41J *33/14*

U.S. Cl. 400—208 **6 Claims**



1. A one-piece ribbon cartridge for a business machine consisting of a single permanently integral unit of substantially constant shape formed with a base portion, said cartridge including first flange means integral with and extending in cantilever fashion from said base portion, and second flange means integral with and extending in cantilever fashion from said base portion in spaced relation to said first flange means, said first and second flange means being located for engaging opposite ends of two ribbon-wound hub members when said hub members are introduced laterally between said first and second flange means, said first and second flange means being formed to mount each of said two hub members for rotation about its axis, said first and second flange means having spaced free flange ends, at least part of at least one of said first and second flange means being capable of resilient deformation relative to said base portion and relative to the other of said first and second flange means whereby the spacing between the spaced free flange ends can be increased manually by such resilient deformation to enable each of said two ribbon-wound hub members to be removed from and replaced into the space between said first and second flange means by lateral movement of said hub members past said spaced free flange ends whereafter release of said resilient deformation enables said first and second flange means to hold each such replaced hub member in its rotatably mounted position, and said cartridge being formed with openings enabling said two ribbon-wound hub members to be rotated in the cartridge by the business machine and the ribbon thereon to circulate through the machine into and out of the cartridge when the cartridge is mounted in a business machine.

4,134,694

DUAL PITCH TABULAR STOP ASSEMBLY

Walter Stuiber, Karben, and Karl Wenderoth, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Adlerwerke vorm. Heinrich Kleyer A.G., Nuremberg, Fed. Rep. of Germany

Filed Mar. 28, 1977, Ser. No. 782,248

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1976, 2618875

Int. Cl.[2] B41J *21/04*

U.S. Cl. 400—293 **3 Claims**

1. Tabulating mechanism for use with dual pitch escapements comprising

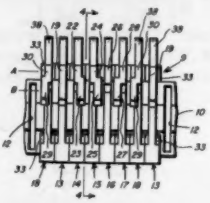
a tab rack,

a plurality of tabs all of which are rotatably detentably mounted and spaced at uniform intervals on said tab rack,

each of said tabs having a first surface in the plane of the tab defining a tab stop in a first repeating series of uniformly spaced tab stops,

each of said tabs less one having a second surface angularly immediately adjacent said first surfaces on said tabs defining a tab stop in a second repeating series of uniformly spaced tab stops of greater spacing than the spacing of said first series of tab stops,

the initial one of said first and second surfaces in each series



being in the same plane with the following second surfaces being offset from the plane of said tabs differing amounts to define said second repeating series of uniformly spaced tab stops,

a tab setting abutment, and

a tabular blade positionable to encounter stop surfaces of set tabs,

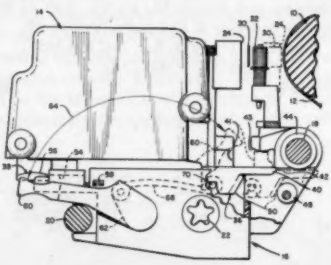
said tab rack being rotatable from a home position in a setting direction to bring said tabs into contact with said setting abutment to move said tabs relative to said rack therby to position stops in said first or second series for encounter with said tabular blade upon restoration of said tab rack to its home position.

4,134,695

PRINTER CARRIAGE

John E. Randolph, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Jul. 13, 1977, Ser. No. 815,132
Int. Cl.[2] B41J *25/30*
U.S. Cl. 400—320 **7 Claims**



2. A carriage apparatus for mounting a spring mechanism for movement in a path across the width of a record medium, along at least one fixed guide rod arranged parallel with the path, under control of means for advancing the carriage in either direction along the guide rod, the carriage including:

means engagable by the print mechanism for offering the print mechanism a degree of movement in a direction perpendicular to the guide rod;

a stop for defining a finite minimum gap between the print mechanism and the record medium;

an overcentering toggle having a movable pivot;

a compression spring engaging at one end the printing mechanism and engaging at its other end the movable pivot for biasing the print mechanism against the stop; and

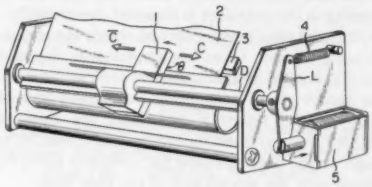
manually-operable means for releasing the biasing means and for moving the print mechanism away from the stop.

4,134,696

PRINTING APPARATUS

Takayoshi Hanakata, Yokohama; Atsushi Noda, Kawasaki, and Mitsuaki Seki, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1976, Ser. No. 744,275
Claims priority, application Japan, Dec. 5, 1975, 50-145283; Dec. 5, 1975, 50-145284
Int. Cl.[2] G01D *15/10*
U.S. Cl. 400—323 **6 Claims**



1. A printing apparatus comprising:

a thermal head having a first edge portion and a second edge portion positioned on the opposite margin of the same side of the head from said first edge portion, and a plurality of thermal elements disposed on said first edge portion;

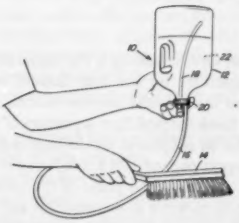
means for holding said thermal head such that the plurality of thermal elements on the first edge portion of said thermal head may be brought into pressure contact with a recording medium, and the second edge portion of said thermal head is spaced from the recording medium with such an inclination that there is provided a predetermined angle θ between said second edge portion and the recording medium centering on said first edge portion wherein said angle θ is selected within the range from 30 minutes to 15 degrees; and control means for causing said thermal head holding means to move in the direction across the width of the recording medium while said second edge portion of said thermal head is selected as a leading edge, while printing is performed on the recording medium by the contacting thermal head.

4,134,697

GRAVITY FEED, FOUNTAIN-TYPE CAR BRUSH

Anders V. Sparr, Sr., Rte. 1, Box 272, Milligan Rd., Waupun, Wis. 53963

Filed May 5, 1977, Ser. No. 794,305
Int. Cl.[2] A46B *11/04*
U.S. Cl. 401—276 **5 Claims**



1. In combination with a fountain brush and a reservoir container of cleaning solution, an improved flow control apparatus, the improvement comprising:

cap means secured to the reservoir container over an opening disposed therein, said cap means having at least a first and a second aperture formed therein;

a supply tube received in the first aperture, the supply tube extending from the container and connecting with the fountain brush to channel cleaning solution from the container to the brush;

a vent tube received in the second aperture, a first end of the vent tube extending through the second aperture in the cap means into the interior of the container and being of a length at least substantially equal to the depth of the container, a second end of the vent tube extending outwardly of the cap means, a channel extending through the vent tube and communicating the interior of the container to ambient being closeable by simple placement of a finger, or the like, over the second end of the vent tube when the opening in the container is disposed downwardly, the end of the vent tube being disposed above the surface of the cleaning solution when said container is disposed downwardly; handle means formed in the reservoir container, the handle means comprising an opening formed in the body of the reservoir container, the opening being adapted to be grasped by the hand of a user, at least one finger of the hand grasping the container being free to be placed over the second end of the vent tube.

4,134,698

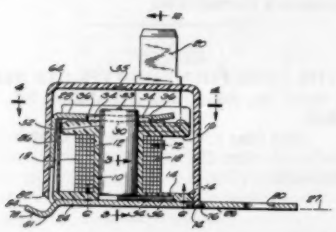
COMPACT FAIL-SAFE BUZZER

Spencer C. Schantz, 16608 W. Rodgers Dr., New Berlin, Wis. 53151

Division of Ser. No. 736,610, Oct. 28, 1976. This application Sep. 21, 1977, Ser. No. 835,386

Int. Cl.[2] F16B *5/00*

U.S. Cl. 403—3 **2 Claims**



1. In an electrical device having a flat metal frame portion with a mounting aperture on one side thereof and having a corner at which said metal frame portion is bent, the improvement comprising a hook formed from a portion of said frame at said corner and bent to project at an oblique angle below the frame with the deepest part of said hook being reversely bent under the corner and toward the plane of the lower surface of said metal frame so as to serve as a connector and as a fulcrum in connecting the frame to an apertured supporting plate, and in which the metal of the hook is yieldable as the device is fulcrumed about the hook to adapt to different thicknesses of supporting plates and enable registration of the mounting aperture.

4,134,699

COUPLING FOR SHAFTS AND THE LIKE

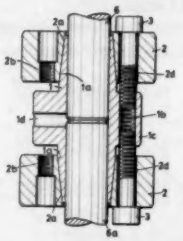
Horst-Dieter Schäfer, Willich; Paul Loosen, Krefeld; Ulrich Klören, Krefeld, and Hans-Martin Thiele, Krefeld, all of Germany, assignors to Ringfeder GmbH, Krefeld, Germany

Filed Mar. 16, 1977, Ser. No. 778,187

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1976, 2610720

Int. Cl.[2] F16B *7/00*

U.S. Cl. 403—13 **7 Claims**



1. A coupling for shafts and the like, comprising a sleeve having a passage adapted to receive the end portions of two aligned shafts, an outer circumferential surface having two axially spaced sections which conically diverge towards each other, and a radial flange intermediate said sections, said sleeve including said flange being of two axially adjacent parts which are mirror-symmetrical with reference to a radial parting line bisecting said flange midway between the axial ends of said flange; connecting means including threaded connectors connecting the parts of said flange to one another in axially aligned relationship; a pair of circumferentially uninterrupted pressure rings each surrounding one of said sections and each having a conically tapering inner circumferential surface complementary to the respectively surrounded section; and means connecting each of said pressure rings with said flange, and operative for pulling said pressure rings in opposite directions axially towards each other and towards said flange to thereby compress said sleeve radially inwardly into frictional engagement with shaft end portions located in said passage.

4,134,700

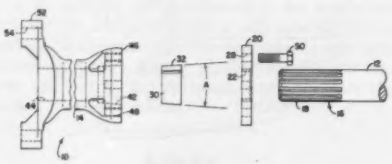
ZERO CLEARANCE SPLINE COUPLING

Robert W. Nelson, and Steven M. Pierce, both of Waterloo, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Feb. 10, 1978, Ser. No. 876,615

Int. Cl.[2] F16B *7/02*

U.S. Cl. 403—334 **10 Claims**



1. A zero backlash coupling comprising: a first shaft having a frusto-conical opening therein; a second shaft having external spline teeth thereon; a collar having a frusto-conical surface thereon engageable with the frusto-conical opening in the first shaft and positionable to encircle the spline teeth on the second shaft, said collar having a radial cut provided therein and internal spline teeth to engage the spline teeth on the second shaft; a keeper having a through hole provided therein positionable to encircle the spline teeth on the second shaft and abut the collar; and means for urging the collar and keeper towards the first shaft to cause engagement of the frusto-coni-

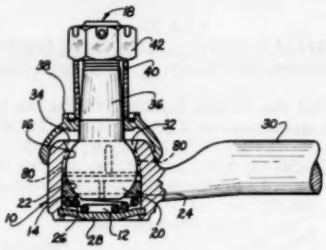
cal surface of the collar with the frusto-conical opening in the first shaft whereby the frusto-conical surface will be held by friction and the collar will clamp around the splined shaft.

4,134,701

FLEXIBLE JOINT CONSTRUCTION

Victor R. McEowen, 379 Pittsfield Dr., Worthington, Ohio 55434

Continuation-in-part of Ser. No. 663,237, Mar. 3, 1976, Pat. No. 4,087,188. This application May 5, 1977, Ser. No. 793,931
The portion of the term of this patent subsequent to May 2, 1995, has been disclaimed.
Int. Cl.[2] F16C *11/06*
U.S. Cl. 403—34 8 Claims



1. A pivot joint comprising, in combination, a cupshaped housing portion provided by a forged carbon steel blank including a cavity provided with an inner wall, one end of said inner wall including a decarbonized spherical bearing surface integrally formed with the forging of said housing and said decarbonized spherical bearing surface having a final machined finish to remove surface metal from which carbon was removed by working of the metal during forging and said final finish also being subsequently locally hardened by induction to provide an annular controlled zone of hardened metal from the interior of said blank for said spherical bearing surface, and said hardened zone being of predetermined thickness with the metal of said housing surrounding said zone being relatively unhardened as compared to said zone; and a ball stud including a head portion having a spherical outer surface pivotally mounted on the spherical bearing surface of the housing portion, said spherical outer surface including lubricating grooves.

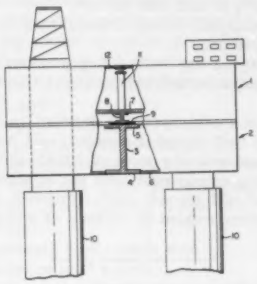
4,134,702

ARRANGEMENT OF PLATFORM DECK FOR OIL RIGS OR THE LIKE

Odd Thunes, Tårnåsen, Norway, assignor to A/S Akers Mek. Verksted, Oslo, Norway

Filed Jun. 1, 1977, Ser. No. 802,454
Claims priority, application Norway, Jun. 4, 1976, 761897
Int. Cl.[2] E02B *17/00*
U.S. Cl. 405—195 7 Claims

1. A platform deck for oil rigs or the like comprising means forming a main deck, means for supporting the main deck, an upper deck flooring positioned on said main deck, walls positioned on said upper deck flooring, and a ceiling mounted on said walls so as to form, together with said upper deck flooring,



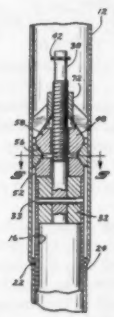
an enclosed upper deck, said flooring being non-rigidly interconnected with said main deck.

4,134,703

LOCKING STRUCTURE FOR EXTENSIBLE POLE

Earl S. Hinners, 3664 Robinwood Ter., Hopkins, Minn. 55434

Filed Feb. 9, 1978, Ser. No. 876,476
Int. Cl.[2] F16B *7/10*
U.S. Cl. 403—104 1 Claim



1. A locking structure for a pair of extensible or telescopic tubular members, having in combination

a first and inner tubular member slidable within a second and outer tubular member,

a threaded member having a head portion integral with and upstanding from the end portion of said first tubular member disposed within said second tubular member,

a wedge member freely slidable on said threaded member and being disposed thereon abutting said head portion,

a second wedge member freely slidable on said threaded member in superposed relation to said first wedge member,

said wedge members having facing tapered portions as mirror images of one another,

an operating member disposed on said threaded member in superposed relation to said second wedge member,

a hub portion of said operating member being threaded onto said threaded member,

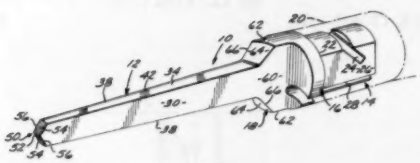
a slotted skirt portion depending from said hub portion yielding circumferentially for a pressure fit within said second tubular member,

said skirt portion having a tapered bore therein,
said second wedge member having an upward extending portion tapered to mate with and be disposed in said tapered bore of said skirt portion,
a split ring disposed on said threaded member between said wedge members,
said split ring having inner facing portions corresponding with the adjacent tapered portions of said wedge members,
whereby when said operating member is rotated downwardly of said threaded member, said wedge members separate said split ring portions radially and urge the same into locking engagement with the adjacent surface wall portion of said second tubular member, said operating member being rotated by rotation of said second tubular member.

4,134,704
TAPERED HOLE CUTTER

Robert D. Jackley, El Monte, and Richard T. Perez, San Pedro, both of Calif., assignors to Deutsch Fastener Corp., Los Angeles, Calif.

Filed Mar. 24, 1977, Ser. No. 780,819
Int. Cl.[2] B23B *51/00, 51/06*
U.S. Cl. 408—57 **25 Claims**

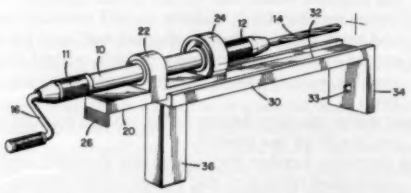


1. A tapered hole cutter which comprises:
an elongated, generally flat cutter blade having front and rear ends, a pair of opposite sides and a pair of opposite edges, said front end of said blade comprising a drill point,
said edges of said blade comprising a pair of elongated cutting edges,
said blade being tapered in the width direction between said cutting edges from a relatively wider rear end to a relatively narrower front end, said taper in width being substantially uniform along the length of said blade, and
said blade being tapered in the thickness direction between said sides from a relatively thicker rear end to a relatively thinner front end.

4,134,705
DRILLING APPARATUS

Samuel C. Smith, 210 Harlman Rd., Newton Centre, Mass. 02159

Filed Apr. 28, 1977, Ser. No. 791,858
Int. Cl.[2] B23B *45/06, 45/14*
U.S. Cl. 408—112 **8 Claims**

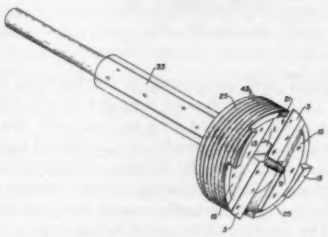


1. A drilling apparatus specially suitable for close-quarter drilling applications within about ¼" of an adjoining surface comprising: drill support means comprising a substantially flat support base having a forward end and a rearward end and at least one ball bearing located along said support base, said drill support means rotatably supporting drilling means in said ball bearing while preventing linear movement of said drilling means with respect to said support base; guide means comprising channel means for supporting said drill support means in linear movable relationship and handle means for manually supporting said drilling apparatus; manual advancement means for said drill support means comprising a thumb rest located at or near said rearward end of said support base in proximate relationship to said handle means and also in substantially direct alignment with said channel means; and, stabilization means for positioning said drilling apparatus against a flat surface such that said drilling means is set substantially perpendicular to said flat surface.

4,134,706
AXIALLY SUPPORTED BORING TOOL

Arthur H. Stewart, 4487 Hillsborough Dr., Castro Valley, Calif. 94546

Division of Ser. No. 725,002, Sep. 20, 1976, Pat. No. 4,090,807.
This application Jun. 27, 1977, Ser. No. 811,821
Int. Cl.[2] B23B *51/00*
U.S. Cl. 408—213 **5 Claims**



1. A drill bit adapted to cut a circular hole in work comprising a central hub, radius segments extending laterally from said hub, each of said segments having a radial cutting blade and a plurality of peripheral spurs, each of said spurs having a channel adjacent thereto and extending completely through said radius segment to relieve residue from action of said spurs which cause friction and heat and oppose rotation of said drill bit.

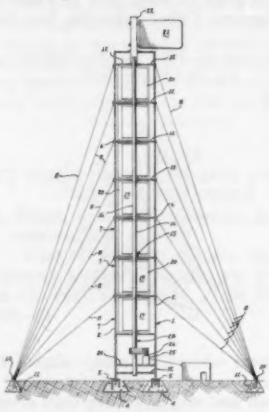
4,134,707
WIND TURBINE APPARATUS

Marion H. Ewers, P.O. Box 526, La Veta, Colo. 81055

Filed Apr. 26, 1977, Ser. No. 791,100
Int. Cl.[2] F03D *7/00*
U.S. Cl. 415—4 **15 Claims**

1. A wind turbine apparatus comprising:
a vertically rising exoskeletal frame having at least two vertically spaced sets of radially converging ribs, means defining an axial opening connecting said ribs, a vertical drive shaft disposed in said axial opening, a collar concentrically disposed around said shaft within said axial open-

ing, means for rotatably supporting said shaft and said collar within said axial opening; a wind shield carried by



said collar, and a rotor carried by said shaft between said vertically spaced sets of radially converging ribs.

4,134,708

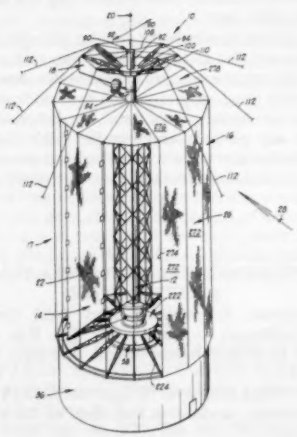
WIND DRIVEN ELECTRIC POWER PLANT

Bradley O. Brauser, 1512 Nicklas, Oklahoma City, Okla. 73127, and Stanley O. Brauser, 511 Ranchwood, Yukon, Okla. 73099

Filed Dec. 22, 1976, Ser. No. 753,265

Int. Cl.[2] F01B *25/06*

U.S. Cl. 415—30 **25 Claims**



1. A wind driven power plant comprising:

a support assembly having a central support shaft;

wind energy collection means supported by the support assembly for presenting a controllably variable wind interception area to the wind, the wind energy collection means characterized as comprising a rotatable power take off member;

rotation rate control means, connected to the power take off member, for generating a positioning signal in response to a variation in the rotation rate of the power take off member, the rotation rate control means comprising:

a hydraulic circuit comprising:

a hydraulic fluid reservoir;

a pressure tank;

pump means, connected to the power take off member and driven thereby, for transferring hydraulic fluid from the reservoir to the pressure tank at a rate proportional to the rotation rate of the power take off member; and

a manual set orifice, fluidically connecting the pressure tank to the reservoir to complete the hydraulic circuit, the manual set orifice providing a resistance to fluid flow to vary the pressure in the pressure tank in proportion to the rate of fluid flow in the hydraulic circuit; and

switch means, in fluidic communication with the pressure tank, for generating an electrical signal when the fluid pressure in the pressure tank attains a preselected upper limiting value and when the fluid pressure falls to a preselected lower limiting value, the switch means comprising:

a high pressure limit switch; and

a low pressure limit switch;

anchor means, angularly positionable about the axis of the central support shaft, for providing an anchor substantially fixed in relation to the direction of the wind; and

connecting means, adjustably connecting the wind energy collection means and the anchor means, for adjusting the wind energy collection means to vary the wind interception area thereof presented to the wind in response to the positioning signal from the rotation rate control means, the connecting means having a driving portion, attached to one of the anchor means and the wind energy collection means, and a driven portion, connected to the other of the anchor means and the wind energy collection means.

4,134,709

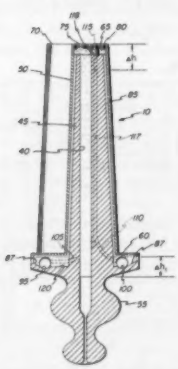
THERMOSYPHON LIQUID COOLED TURBINE BUCKET

John H. Eskesen, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1976, Ser. No. 716,982

Int. Cl.[2] F01D *5/18*

U.S. Cl. 416—1 **13 Claims**



1. In a thermosyphon liquid cooled turbine bucket comprising a core; a skin overlying said core and presenting an aerodynamic surface; a plurality of subsurface coolant channels disposed beneath said skin and having radially inner and radially outer ends, said subsurface coolant channels being disposed on both suction and pressure sides of said bucket and extending substantially the radial length of said aerodynamic surface; a tip portion disposed radially outward from the termination of said subsurface coolant channels; a root portion for fixing said bucket to a turbine disk; a platform disposed between said root portion and said core; means disposed in said tip portion for distributing liquid coolant to said subsurface coolant channels; means for receiving liquid coolant into said bucket and conducting liquid coolant to said distributing means; means in flow communication with the radially inner ends of said subsurface

coolant channels for collecting vaporized coolant and means in flow communication with said collecting means for exhausting vaporized coolant from said bucket, the improvement comprising:

said receiving and conducting means being a liquid coolant supply conduit extending uninterrupted and unbroken from an opening in said root portion, through said root portion and said core, directly interconnecting said opening and said distributing means and

said collecting means being in communication with said supply conduit only at said tip region via said subsurface coolant channels and said distributing means, said collecting means comprising:

(a) a first vapor manifold disposed between said root portion and said core, said first vapor manifold communicating with the radially inner ends of said subsurface coolant channels on the pressure side of said turbine bucket and

(b) a second vapor manifold disposed between said root portion and said core, said second vapor manifold communicating with the radially inner ends of said subsurface coolant channels on the suction side of said turbine bucket, and

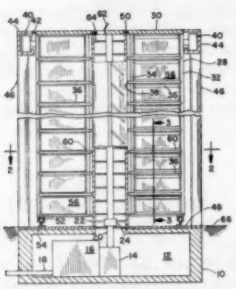
a drain passage communicating with said first and second vapor manifolds and terminating in an outlet in said tip region, said drain passage providing for the discharge of excess liquid coolant from said first and second manifolds to the exterior of said bucket adjacent said tip portion.

4,134,710

SIMULTANEOUS PLURAL-DIRECTIONAL FLOW MOTOR

DeWitt T. Atherton, 407 W. E St., Encinitas, Calif. 92024

Filed Mar. 28, 1977, Ser. No. 781,840
Int. Cl.² F03D *3/02*
U.S. Cl. 416—117 **7 Claims**



1. A tidewater motor driven by discrete simultaneous currents of water flowing in different directions at different levels and by wind above the water, said motor comprising:

(a) a base providing fixed installation of the motor on a beach, beneath the low tide level;

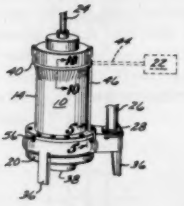
(b) a rotor assembly mounted on said base for rotation about a vertical axis, said rotor having a plurality of vertically spaced ring plates and independently activated one way current-driven vanes of flap-valve character mounted on and between said plates in a plurality of vertically spaced tiers extending from adjacent said base to above the high tide level, different tiers of vanes being simultaneously activated by shoreward currents of water generated by incoming waves and backflow currents of water and further activated by accompanying wind irrespective of the direction thereof.

4,134,711

SUBMERSIBLE PUMP APPARATUS

Earl E. Ivins, and John L. Ivins, both of Lakewood, Calif., assignors to Engineers Sales-Service Co., Inc., Los Angeles, Calif.

Filed Nov. 26, 1976, Ser. No. 745,332
Int. Cl.² F04B *17/00*
U.S. Cl. 417—370 **2 Claims**



1. In an elongated submersible pump adapted for vertical orientation in a sump or the like and having a pump motor and a motor case, shaft seal means, a drive shaft coupled to the pump motor and extending downwardly from the motor case through the shaft seal means, an impeller coupled to the drive shaft for rotation of the impeller in an impeller case located below the motor case for pumping material out of the sump, the improvement comprising:

first conduit means including a ring located in surrounding relation to the upper extremity of said motor case;

second conduit means connected at one end thereof to said ring and at the other end thereof to a high pressure discharge portion of the impeller case adjacent the impeller, said second conduit means establishing liquid and gaseous fluid communication between said ring and the interior of said impeller case;

said ring having apertures for venting gases from said impeller case and for directing fluid from said impeller case onto said upper extremity of said motor case,

whereby the pump may be cooled by fluid from said impeller case for running in an unsubmerged condition,

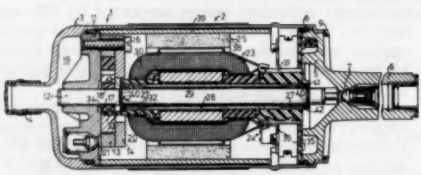
whereby any gases in said impeller case may be vented through the apertures in said ring, and whereby any foreign accumulations on said motor case tend to be washed away.

4,134,712

FUEL SUPPLY UNIT CONSISTING OF A PUMP AND AN ELECTROMOTOR

Ulrich Kemmner, Sachsenheim; Karl Ruhl, Gerlingen, and Rainer Schillinger, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,626
Claims priority, application Fed. Rep. of Germany, May 3, 1976, 2619062
Int. Cl.² F04B *17/00*
U.S. Cl. 417—423 R **10 Claims**



1. A fuel supply unit comprising a pump having a rotor and an electromotor having an armature, a rigid mounting shaft common to said pump rotor and said electromotor armature, first bearing means for rotatably mounting said pump rotor on

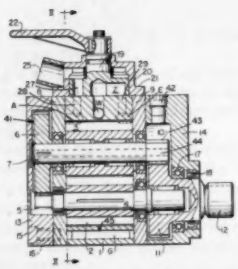
said shaft, second bearing means independent of said first bearing means for rotatably mounting said armature on said shaft independently of said pump rotor, a separate axially extending, coupling member disposed in concentric relationship with said shaft between said pump rotor and said motor armature, means on said coupling member and adjacent portions of said pump rotor and said motor armature arranged for driving engagement to thereby form a driving connection between said motor armature and said pump rotor.

4,134,713

COMPACT FLUID DRIVEN MOTOR AND REDUCTION GEAR MECHANISM

Jean D. E. Binaut, Auberchicourt, France, assignor to S.O.M.-M.O.S., Auberchicourt, France

Filed Jul. 19, 1976, Ser. No. 706,293
Claims priority, application France, Jul. 21, 1975, 75 23074
Int. Cl.[2] F01C *1/20, 13/00, 21/04;* F16H *1/20*
U.S. Cl. 418—91 **13 Claims**



1. A reversible reduction gear motor driven by a pressurized fluid comprising a hollow recoil rotor which engages a drive rotor, inlet and outlet means disposed within said motor to supply and remove respectively said pressurized driving fluid to said rotors, said recoil rotor being mounted on and rotating freely around a shaft extending through said recoil rotor, said shaft having a reduction gear mounted on one end thereof which engages a pinion mounted on one end of the shaft of said drive rotor, the other end of said shaft extending through the recoil rotor having a pinion mounted thereon which engages a second reduction gear, the axis of rotation of which is coincident with the axis of rotation of said drive rotor so that said drive rotor is positioned between said second reduction gear and the pinion mounted on the drive rotor shaft.

4,134,714

MULTI-STAGE CONTINUOUS PLASTIC EXTRUSION APPARATUS, AND EXTRUSION SCREW

Roger D. Driskill, Seymour, Conn., assignor to General Electric Company, New York, N.Y.

Filed Apr. 18, 1977, Ser. No. 788,252
Int. Cl.[2] B29F *3/03, 3/06, 3/10*
U.S. Cl. 425—113 **7 Claims**

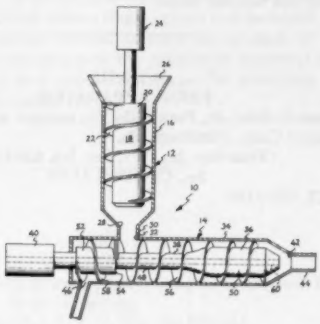
1. An apparatus for the continuous blending and plasticizing of a heat softenable and curable molding compound comprising plasticizable polymeric material and continuously extrusion molding the blended and plasticized compound, comprising,

(a) a preceding extruder unit comprising an extruder barrel having an upstream inlet and a downstream outlet, and containing therein a rotatable extruder screw;

(b) a connection comprising a passage leading from the outlet of the barrel of the preceding extruder unit to an inlet in an intermediate portion of a succeeding extruder unit;

(c) a succeeding extruder unit comprising an extruder barrel having an inlet positioned intermediate its upstream end and its downstream end and a downstream outlet, and containing therein a rotatable screw, said extruder barrel of the succeeding extruder unit having a surplus discharge outlet located upstream from its intermediate inlet; and

(d) the rotatable screw of said succeeding extruder unit comprising a shaft extending from beyond the upstream end of the extruder barrel substantially through the length of said barrel towards the outlet and having a portion therein intermediate its length of substantially reduced cross-section located adjacent to the intermediate inlet of the succeeding extruder unit and extending downstream therefrom and an adjoining portion providing an enlarged



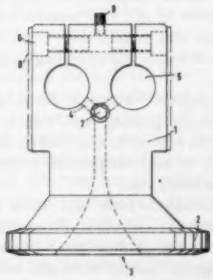
cross-section extending upstream from said portion of reduced cross-section with an interface between the adjoining portions of reduced and enlarged cross-sections of the shaft forming a generally radial extending shoulder located upstream from said intermediate inlet, said shaft being provided with a helical screw flight extending downstream from the interface shoulder having a pitch to advance molding compound from the intermediate inlet downstream toward the outlet, and a helical screw flight extending upstream from the interface shoulder having an opposite pitch to advance surplus molding compound upstream toward the surplus discharge outlet.

4,134,715

HEAD FOR MULTIPLE INSULATION OF CONDUCTORS

Agustin Cueto, Zaragoza, Spain, assignor to Cables de Communicaciones, S.A. of Poligono Industrial de Maplica C/D, Zaragoza, Spain

Filed Dec. 27, 1976, Ser. No. 754,415
Claims priority, application Spain, Jul. 26, 1976, 222.540
Int. Cl.[2] B29F *3/08*
U.S. Cl. 425—144 **1 Claim**



1. A head for multiple insulation of conductors, comprising a one-piece body, a shape on one end of said body adapted to enable it to be coupled to an extrusion machine, at least two

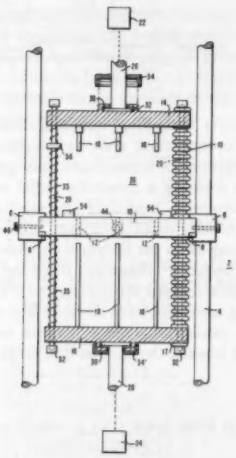
sets of jaws in said body, said jaws forming circular openings passing completely through said body in a substantially straight path, said jaws being adapted to grip self-centering dies, a main inlet duct through said shape, a plurality of calibrated passages connected to said main inlet duct, at least one flow regulator means operatively associated with said calibrated passages for regulating the flow of material passing from the main inlet duct to the plurality of calibrated passages, said calibrated passages opening into said jaws substantially normal to the axes of said circular openings, heating means on said body for keeping it at the right working temperature, and thermostat means in thermal contact with said body for controlling said heating means.

4,134,716

PRESS APPARATUS

Clarence D. John, Jr., Penn Hills, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 23, 1977, Ser. No. 836,175
Int. Cl.[2] B30B *15/04*
U.S. Cl. 425—186 **5 Claims**



1. Press apparatus for forming nuclear fuel pellets comprising:

(a) a die set having means for receiving nuclear fuel powder;

(b) a frame having means for slidably receiving and supporting said die set in an operating position;

(c) drive apparatus spaced from said frame for applying a reciprocating force;

(d) a punch block cooperatively associated with a punch matingly sized to said fuel powder receiving means so as to compress said powder into a nuclear fuel pellet, said punch block being slidingly engageable with said drive apparatus;

(e) means engageable with said die set and punch block for reciprocatingly guiding said punch into a preselected position with respect to said fuel powder receiving means in response to said reciprocating force being applied to said punch block; and

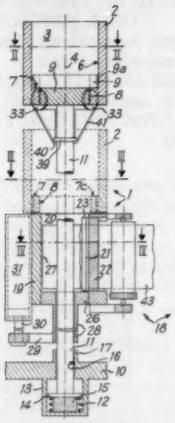
(f) means extendable from said frame for supporting in a position extended outwardly from said frame, said die set, punch block and guiding means such that upon slidingly disengaging said die set from said receiving and supporting means said punch block is slidingly disengaged from said drive apparatus, and such that said die set, punch block and guiding means are supported in said position extended from said frame.

4,134,717

APPARATUS FOR THE DEPOSITION AND PRESHAPING OF A BAND SECTION IN A SHAPING MOLD

Raymond C. Philippon, Saint-Cloud, and Jean-Claude H. Hautemont, Gif-sur-Yvette, both of France, assignors to Etude et Realization de Chaines Automatiques ERCA, Orsay, France

Filed May 2, 1977, Ser. No. 792,603
Claims priority, application France, May 5, 1976, 76 13433
Int. Cl.[2] B29C *17/00*
U.S. Cl. 425—383 **15 Claims**

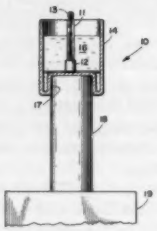


1. An apparatus for the deposition and preshaping of a band section in a shaping mould having at least one shaping cavity defined by the inner side walls of the mould, said mould being vertically movable between an upper position and a lower position, said apparatus being of the type having a transfer plunger equipped with a control rod and mounted in sliding manner in a cylindrical cavity of a band section prewinding unit, said prewinding cavity being open at least towards the moulding unit and adapted to receive a coiled band section and located below and in the immediate vicinity of the lower position of the moulding unit and aligned with the said shaping cavity which, at its lower end has an inner shoulder extending perpendicularly to the axis and towards the inside of the shaping cavity, a base plate for the mould comprising a base plate which is supported on the machine frame via a supporting rod extending generally centrally of said shaping cavity and whose dimensions are such that the side walls thereof can engage without a significant lateral clearance in the base opening of said shaping cavity defined by the said internal shoulder, rotatable applicator members on said base plate positioned below the upper face of the base plate in such a way that they are located in the vicinity of and face the displacement path of at least portions of the side wall of the shaping cavity of the mould, said portions having a smaller radius of curvature than that of the other portions of the side walls, said applicator members serving to draw the band section against said junction portions during the upward movement of the mould relative to said base plate, and maintaining means to maintain at least approximately the band section in the position imposed on it within the shaping cavity by said applicator members, the internal shoulder of the shaping cavity being interrupted by vertical passage slots at the location of the junction portions so that passages are provided for the applicator members, the base plate having lateral covering protuberances which are able to penetrate into said slots with a certain lateral clearance and which cover the major portion of the applicator means, said transfer member and its control rod being hollow and positioned concentrically to the supporting rod.

4,134,718
OIL-BURNING ILLUMINATING DEVICE

Paul D. Kayfetz, Bolinas; Joseph McHugh, and James Dugan, both of Mill Valley, all of Calif., assignors to CMA, Inc., Bridgeport, Conn.

Filed Dec. 10, 1976, Ser. No. 749,232
Int. Cl.[2] F23Q *2/32*
U.S. Cl. 431—125 **3 Claims**

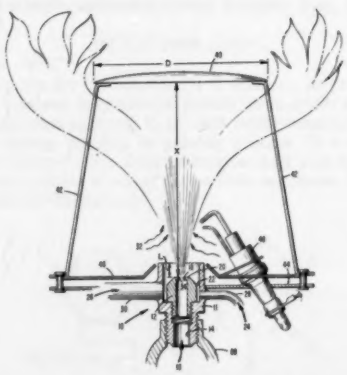


1. An oil-burning illuminating device for producing a candle-like flame, comprising:
a container having a closed bottom and an open top;
a tubular, heat-resistant wick holder, open at both ends;
a fibrous wick retained in the wick holder, extending outwardly from one end; and
means associated with the other end of the wick holder and with the container bottom for retaining the wick holder upright in the container with said one end upward, said means comprising a flat portion of the container bottom and a foot connected to said other end of the wick holder, having horizontally-extending projections for seating flatly on said flat portion,
said foot including an upwardly-extending sleeve sized to fit tightly over said other end of the wick holder for connecting the foot to the wick holder, said sleeve being open at its bottom to admit oil to the wick holder and the wick,
whereby combustible oil may be placed in the container to a level at least above said other end of the wick holder and burned at the outwardly extending portion of the wick.

4,134,719
MULTI-FLAME FUEL BURNER FOR LIQUID AND GASEOUS FUELS

Wallace W. Velie, 520 W. Emerson St., Upland, Calif. 91786

Filed Sep. 27, 1976, Ser. No. 726,795
Int. Cl.[2] F23M *9/06*
U.S. Cl. 431—171 **9 Claims**

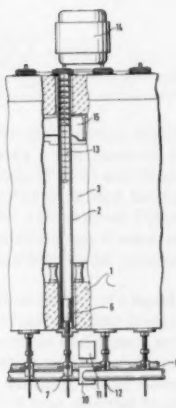


1. A multi-flame air-atomizing fuel burner system comprising a plurality of air-atomizing nozzle means for using primary gas under pressure to disperse fuel, each of said air-atomizing nozzle means including a substantially vertically oriented, open ended atomizer housing, each of said housings having an aperture through which said primary gas is expanded to disperse said fuel, means for delivering liquid fuel to said atomizer housing of each of said air-atomizing nozzle means adjacent said aperture, means for delivering gaseous fuel to said atomizer housing of each of said air-atomizing nozzle means adjacent said aperture, means for selecting the type of fuel delivered to said air-atomizing nozzle means, means for delivering primary gas under pressure through said aperture of each of said air-atomizing nozzle means to disperse one of said fuels so that the dispersed fuel may be ignited in the presence of secondary air to produce a combustion flame, said air-atomizing nozzle means being spaced apart and arranged in a pattern to provide cross-ignition from a single ignited nozzle means, and flame spreader means located downstream of each of said air-atomizing nozzle means in the gaseous or hydroxyl type combustion zone of a combustion flame for stabilizing and shaping said combustion flame.

4,134,720
JET PIPE SEAL

Carl-Heinz Stiasny, Bruneck, Italy, assignor to Birfield Trasmissioni S.p.A, Bruneck, Italy

Filed Jul. 7, 1977, Ser. No. 813,661
Claims priority, application Italy, Aug. 24, 1976, 26471 A/76
Int. Cl.[2] F23B *5/14*
U.S. Cl. 432—209 **4 Claims**



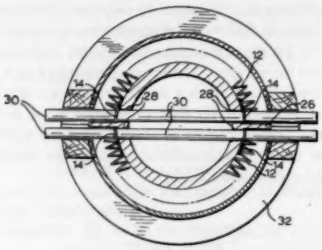
1. In an industrial furnace arranged to carry out a treatment process, said furnace being constituted for operation in the performance of said treatment process within a specific predetermined operating range of temperatures, and including at least one jet pipe extending through the interior of said furnace, a burner located in operative relationship with said jet pipe, a flange on said burner with a recess in said flange for receiving in mounting engagement one end face of said jet pipe, and a seal for sealing the interior of said jet pipe from the interior of said furnace, wherein the improvement comprises that said seal is positioned between said end face of said jet pipe and said recess in said flange with said jet pipe end firmly seated in said seal, and that said seal is formed of a specific metalic material which is in the solid state when the temperature within the furnace is below said predetermined operating range of temperatures and which changes into the plastic state whenever the temperature in said furnace increases and is within said predetermined operating range.

4,134,721

PRECAST FURNACE PIPE INSULATION

Raymond W. Davis, Etobicoke, and Paul J. J. Downey, Burlington, both of Canada, assignors to Plibrico Company Inc., Chicago, Ill.

Filed Jul. 11, 1977, Ser. No. 814,385
Int. Cl.[2] F27D 3/02; F16L 9/14
U.S. Cl. 432—234 5 Claims



1. A precast reinforced insulating member for use as a covering for a furnace pipe comprising:

(a) a body of insulating material having an arcuate shaped inner surface adapted to extend in intimate contact with the surface of a furnace tube in use, an outer surface, a pair of transverse side faces extending from the inner arcuate surface to the outer surface and longitudinally of the body, and a pair of oppositely disposed end faces;

(b) a plurality of resiliently deformable coil spring members, each coil spring member having a pair of oppositely disposed ends and a convoluted body extending therebetween, each coil spring member extending circumferentially of said body with the inner periphery of each turn of its convoluted body located at said inner surface, each coil spring member having a diameter such that its outer periphery projects a substantial distance into said body of insulating material, each coil spring member being resiliently longitudinally elongated to space adjacent turns thereof from one another to facilitate the passage of fluid insulating material therebetween during casting, the resilient elongation loading the coil spring member so that it is retained in its regular location when changing the mold during precasting,

(c) passage means opening through said body between said inner arcuate surface and said outer surface thereof adjacent each end of each reinforcing coil spring member;

(d) weldable lug means secured to each end of each reinforcing coil spring member and projecting into each passage means in a plane disposed adjacent to and substantially parallel to said inner arcuate surface whereby a substantial portion of each weldable lug means is disposed in weldable proximity to a furnace pipe and is accessible through said passage means when the insulating member is operably located about a furnace pipe in use.

4,134,722

REACTIVE DYEING SYSTEM USING PHOSPHORUS ACID DYES WITH A CYANAMIDE COMPOUND

Ronald Swidler, and William A. Sanderson, both of Palo Alto, Calif., assignors to Burlington Industries, Inc., Greensboro, N.C.

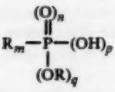
Continuation of Ser. No. 534,349, Dec. 18, 1974, abandoned, which is a continuation-in-part of Ser. No. 441,393, Feb. 11, 1974, abandoned, which is a continuation-in-part of Ser. No. 260,587, Jun. 7, 1972, abandoned. This application Feb. 24, 1977, Ser. No. 771,461

Int. Cl.[2] D06P *1/38*

U.S. Cl. 8—1 A **34 Claims**

1. A method of forming a reactively dyed polymeric substrate, said method comprising

(a) contacting a polymeric substrate containing active hydrogen atoms present in the form of alcoholic hydroxyl, amino or thiol groups, with a cyanamide compound selected from the group consisting of cyanamide, alkyl-substituted cyanamide, dicyandiamide, and alkyl-substituted dicyandiamide, wherein the alkyl groups each contain 1–6 carbon atoms, and with a coloring amount of a chromophore-substituted phosphorus acid of the formula:



wherein R is a chromophore, m is 0, 1 or 2, n is 0 or 1, p is 1 or 2, q is 0 or 1, and m + p + q = 3, at least one of m and q being other than 0, at a pH of from about 1.5 to about 9, wherein the molar equivalent ratio of said cyanamide compound to each phosphorus acid function of said chromophore-substituted phosphorus acid is at least about 2:1, and

(b) heating the thus contacted substrate to a temperature of at least 200° F. for a time sufficient to fix said chromophore to said substrate by condensation reaction between said active hydrogen and the phosphorus acid function of said chromophore-substituted phosphorus acid so as to join the chromophore to the substrate through the P atom.

4,134,723

COLORATION PROCESS

Violet Boyd; Brian R. Fishwick, both of Manchester, England, and Brian Glover, Charlotte, N.C., assignors to Imperial Chemical Industries Limited, London, England

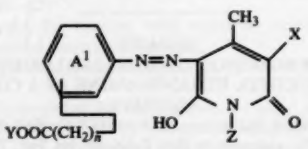
Continuation of Ser. No. 666,246, Mar. 12, 1976, abandoned. This application Nov. 1, 1977, Ser. No. 847,492

Claims priority, application United Kingdom, Mar. 25, 1975, 12423/75

Int. Cl.[2] C09B *27/00*

U.S. Cl. 8—41 C **9 Claims**

1. A process for the colouration of aromatic polyester/cellulose or aromatic polyester/polyamide union textile materials which comprises applying to the said textile materials, by an aqueous dyeing, padding or printing process, (1) a disperse monoazo dyestuff, free from carboxylic acid and sulphonic acid groups, which, in one of the possible tautomeric forms, is represented by the formula:



wherein

n is 0 or 1, Y is lower alkyl, lower alkoxy lower alkyl, lower alkoxy lower alkoxy lower alkyl, hydroxy layer alkyl or hydroxy lower alkoxy lower alkyl, and the remaining positions of the benzene ring A^1 are bonded to hydrogen chlorine, bromine, nitro, lower alkoxycarbonyl, lower alkyl or lower alkoxy,

X is hydrogen, lower alkyl, carbamoyl, cyano, chlorine, bromine, nitroso, nitro, lower alkylcarbonyl, sulphamoyl, lower alkylsulphonyl, lower alkylcarbonylamino or lower alkoxycarbonyl; and

Z is hydrogen or lower alkyl;

and (2) a dyestuff to colour the cellulose or polyamide fibers, and subsequently giving the coloured textilel material a treatment in an aqueous alkaline bath which does not contain a reducing agent, at a pH above 8 and at a temperature between 50° and 85° C.

4,134,724

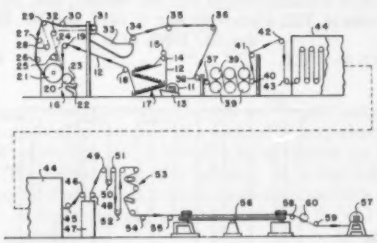
PROCESS FOR DYEING HIGHLY MOISTURE ABSORBENT CELLULOSE CONTAINING TEXTILE MATERIALS

Dewey T. Thompson; John H. Parkins, and James B. Nichols, all of LaGrange, Ga., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 10, 1977, Ser. No. 850,458

Int. Cl.[2] D06P *3/60*

U.S. Cl. 8—54.2 **11 Claims**



1. An improved method for dyeing highly moisture absorbent cellulose containing textile materials having a ratio of filling to warp of between 77 to 23 and 50 to 50 in which such textile materials are woven from yarn having a range of twist multiplier of from about 2.25 to about 5.00 comprising

(a) applying an effective amount of water to a first surface of said cellulose containing textile material to moisten said first surface;

(b) applying an effective amount of a liquid dye admixture to a second surface of said cellulose containing textile material to sufficiently cover said second surface, said second surface being opposite said first surface;

(c) maintaining the resulting textile material in a holding zone for a period of time effective to allow the dyestuff constituent of said liquid dye admixture to migrate throughout said cellulose containing textile material; and

(d) heating the dyed textile material at a temperature of from about 300° F to about 400° F for a period of time effective to fix the dyestuff to said textile material.

4,134,725

PROCESS FOR THE PRODUCTION OF GRANULES

Urs Büchel, Oberwil, and Hans Mollet, Reinach, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 19, 1977, Ser. No. 798,553

Claims priority, application Switzerland, May 25, 1976, 6570/76

Int. Cl.[2] C09B *67/00*

U.S. Cl. 8—79 **5 Claims**

1. A solid granulate consisting essentially of 45 to 99.5% by weight of an organic substance and 0.1 to 50% by weight of additives and the remainder moisture, manufactured by a process comprising the steps of

(a) applying a granulating liquid, containing 0.1 to 50% by weight relative to the granulating liquid of at least one granulating assistant selected from the group consisting of a wetting agent, a dispersing agent, a binding agent and a solubility improving agent, to a pulverulent organic substance, which is subjected to a tumbling or rolling rotating movement, said granulating liquid being applied to such an amount that the point of equilibrium between the moisture content of the substance and that of the air is exceeded, and is from 5% to 300% by weight relative to the pulverulent substance, to uniformly moisten said pulverulent organic substance and dissolve the surface of the particles of the substance, thereby forming a moist granulate thereof; and

(b) subsequently drying the moist granulate until its moisture content falls to or below said point of equilibrium to form said solid granulate.

4,134,726

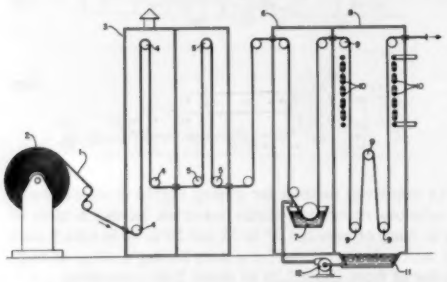
TEXTILE FABRIC AND METHOD OF PREPARATION

Grover W. Rye, Cuyahoga Falls; Anthony J. Scarpitti, and Theodore M. Kersker, both of Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 646,219, Jan. 2, 1976, which is a continuation of Ser. No. 526,082, Nov. 22, 1974, abandoned, which is a continuation of Ser. No. 266,857, Jun. 28, 1972, abandoned. This application Apr. 7, 1977, Ser. No. 785,397

Int. Cl.[2] D06L *1/10*

U.S. Cl. 8—139.1 **6 Claims**



1. A method of inhibiting the tacky contaminate in a process for application of a polyisocyanate to a woven textile tire cord fabric by continuous treatment thereof with an organic solvent containing about 0.1 to about 1 weight percent of said polyisocyanate in which it is desired to recycle said organic solvent; where said fabric is prepared from materials selected from at least one of polyamides, polyesters, cotton and rayon, where said polyisocyanate has an isocyanate functionality in the range of 2 to about 3 and where said organic solvent is a chlorohydrocarbon selected from dichloroethylene, trichloroethylene, 1,1,2,2-tetrachloroethylene, dichloromethane, 1,2-dichloroethane, trichloroethane, 1,1,1-trichloroethane and 1,1,2-tetrachloroethane; where said method comprises, in cooperative sequential preparation steps which have been allowed to equilibrate for at least 1 hour with the fabric under a tension of about 0.2 to 7 pounds per cord, (A) pretreating said fabric in a pretreat stage over a period of about 5 to about 120 seconds by preheating the fabric to a temperature in the range of about 70° C. to about 200° C. to remove volatile fabric finishing materials and moisture therefrom by evaporation, (B) cooling said fabric to a temperature of about 25° C. to about 55° C. and at least about 5° C. below the boiling point of said volatile organic solvent, (C) immediately dipping and wetting the pretreated fabric in an application stage for about 0.1 to about 1 second in a solution comprising said organic chlorohydrocarbon solvent and said polyisocyanate to deposit a portion of said polyisocyante onto the fabric, (D) drying the fabric in a drying and recovery stage, which is enclosed from the atmosphere, by heating to a temperature in the range of about 80° C. to about 150° C. to evaporate at least about 97 weight percent of said chloro-hydrocarbon solvent and polyisocyanate from the fabric and condensing and recovering the evaporated chlorohydrocarbon solvent followed by recycling the recovered chlorohydrocarbon solvent back to said application stage, where said drying and recovery stage is essentially enclosed from the atmosphere.

4,134,727

AQUEOUS SOLUTION OF SODIUM METASILICATE AND N-AMINOETHYL ETHANOLAMINE AS A COLD-END ADDITIVE

Francis J. Oschell, Stanhope, and Bruce L. Libutti, Pompton Plains, both of N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation-in-part of Ser. No. 713,726, Aug. 12, 1976, abandoned. This application Sep. 12, 1977, Ser. No. 832,328

Int. Cl.[2] C23F *11/00, 11/02*

U.S. Cl. 422—9 **14 Claims**

1. A method of reducing the amount of sulfur trioxide condensation on, and therefore the amount of sulfuric acid corrosion of, metal parts at the cold-end of a combustion system in contact with combustion gases derived from the combustion of sulfur-containing fuel, which combustion gases flow along a path at the cold-end of the combustion system from a first zone of relative turbulence to a second zone at which the turbulence subsides, said method comprising:

adding to the combustion gases at the cold-end of the combustion system and at said zone of turbulence an effective amount for the purpose of an aqueous solution of sodium metasilicate and N-aminoethyl ethnolamine such that the additive will travel along with said combustion gases as solids, vapor, and/or liquid droplets from said zone of turbulence to said second zone and deposit on surfaces of said metal parts.

4,134,728

N-AMINOETHYL ETHANOLAMINE AS A COLD-END ADDITIVE

Bruce L. Libutti, Bethayres, and Francis J. Oschell, North Hills, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 713,727, Aug. 12, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,797

Int. Cl.[2] C23F *11/00, 11/02*

U.S. Cl. 422—9 **16 Claims**

1. A method of reducing the amount of sulfur trioxide condensation on, and therefore the amount of sulfuric acid corrosion of, metal parts at the cold-end of a combustion system in contact with combustion gases derived from the combustion of sulfur containing fuel, which combustion gases flow along a path at the cold-end of the combustion system from a first zone of relative turbulence to a second zone at which the turbulence subsides, said method comprising:

adding to the combustion gases at the cold-end of the combustion system and at the zone of turbulence an effective amount for the purpose of an alkanolamine additive comprising N-aminoethyl ethanolamine such that said additive will travel along with said gases, as vapor and/or liquid droplets from said zone of turbulence to said second zone and deposit on surfaces of said metal parts.

4,134,729

AQUEOUS SOLUTION OF SODIUM ALUMINATE AND N-AMINOETHYL ETHANOLAMINE AS A COLD END ADDITIVE

Bruce L. Libutti, Bethayres, and Francis J. Oschell, North Hills, both of Pa., assignors to Betz Laboratories, Inc., Trevose, Pa.

Continuation of Ser. No. 713,729, Aug. 12, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,563

Int. Cl.[2] C23F *11/00, 11/02*

U.S. Cl. 422—9 **12 Claims**

1. A method of reducing the amount of sulfur trioxide con-

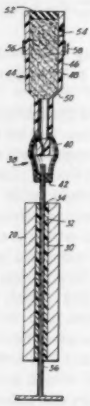
densation on, and therefore the amount of sulfuric acid corrosion of, metal parts at the cold-end of a combustion system in contact with combustion gases derived from the combustion of sulfur-containing fuel which combustion gases flow along a path at the cold-end of the combustion system from a first zone of relative turbulence to a second zone at which the turbulence subsides, said method comprising:

adding to the combustion gases at the cold-end of the combustion system and at said zone of turbulence an effective amount for the purpose of an aqueous solution of sodium aluminate and N-aminoethyl ethanolamine such that the additive will travel along with the gases as solids, vapor, and/or liquid droplets from said zone of turbulence to said second zone and deposit on surfaces of said metal parts.

4,134,730
SPOTTING SYSTEMS AND METHODS PERTAINING THERETO

Babington A. Quame, 331 E. 29th St., New York, N.Y. 10016

Filed Sep. 20, 1977, Ser. No. 835,168
Int. Cl.[2] G01N *33/16, 1/14*
U.S. Cl. 23—230 B **25 Claims**



24. A method for providing spots of specimens on a surface, comprising the steps of dropping two drops of methanol into a beaker which has a dried urine residue therein, for dissolving the residue in the drops of methanol, then sucking the drops of methanol with the urine residue dissolved therein into a capillary tube, and then placing an end of the capillary tube close to a surface onto which the liquid in the capillary tube flows from the interior of the capillary tube.

4,134,731
COMPOSTING APPARATUS WITH COMMINUTION, MOISTURE CONTROL, AND MASCERATOR MEANS

John E. Houser, Marion, Ohio, assignor to Aerotherm, Inc., Delaware, Ohio

Filed Sep. 30, 1976, Ser. No. 728,188
Int. Cl.[2] C05F *9/04*
U.S. Cl. 195—127 **17 Claims**

1. A system for treating solid waste by composting the organic material thereof, comprising:

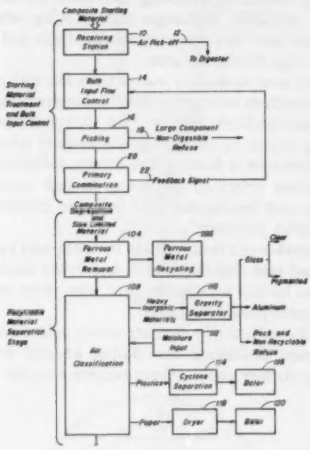
receiving station means for receiving untreated waste material;

input transfer means for moving said untreated waste material from said receiving station means at a select transfer rate;

comminution means for comminuting said waste material to derive a size limited material having a select maximum average particle size;

feedback means from said comminution means to adjust the select transfer rate to avoid overloading said comminuting means;

means for mixing said size limited material with water moisture, by the substantially non-destructive agitation thereof over an interval of time selected to derive a substantially uniform moisture content for said size limited material in the range of about 50–60% by weight;



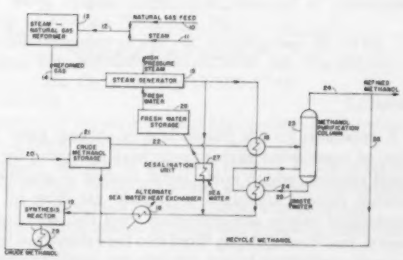
macerator means for converting said size limited material of select moisture content into a material of pulp-characterized consistency said conversion being carried out without the substantial further addition of water and said material of pulp-characterized consistency having a moisture content remaining moisture optimized for said aerobic digestion; and

digester means for inducing the aerobic decomposition of said material of pulp-characterized consistency.

4,134,732
FLOATING METHANOL PLANT

Robert G. Jackson, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Jun. 8, 1977, Ser. No. 804,650
Int. Cl.[2] B01D *3/00;* **B63B** *35/28;* **C07C** *29/16*
U.S. Cl. 422—198 **2 Claims**



1. In a plant for producing methanol from natural gas, said plant being mounted on a floating structure and comprised of a steam-natural gas reformer, a synthesis reactor and a distillation unit for purification of methanol produced in the synthesis reactor and wherein steam-containing gas from the reformer provides heat for the distillation unit, the improvement comprising:

a desalination unit for making fresh water for said plant from

sea water, said desalination plant utilizing heat from reformed gas produced in said reformer;

fresh water storage means for storing desalinated water produced in said desalination unit, said fresh water storage means having a capacity sufficient to store enough desalinated water to operate said plant for at least three days;

heat exchanger means between said reformer and said synthesis reactor for reboiling bottoms from said distillation unit, said heat exchanger means being adapted to exchange heat between said reformed gas and the bottoms from said distillation unit;

alternate heat exchanger means between said reformer and said synthesis reactor for conditioning reformed gas ahead of said synthesis reactor, said alternate heat exchanger being cooled by water from the body in which said floating structure is floating and having sufficient capacity to condition reformed gas going to said synthesis reactor when said desalination unit and said distillation unit are not being operated;

crude methanol storage means between said synthesis reactor and said distillation unit, said crude methanol storage means having a capacity of at least three days of crude methanol production; and

means for selectively shutting down said desalination unit and said distillation unit during adverse weather while said reformer and synthesis reactor continue to operate.

4,134,733

APPARATUS FOR TREATMENT OF EXHAUST GASES

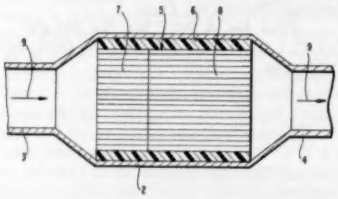
Herbert M. Völker, Hanau; Polat Öser, Wolfsburg; Gerhard Döring, Wolfsburg, and Harald Koch, Wolfsburg, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of Ser. No. 702,558, Jul. 6, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,418

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1975, 2530822

Int. Cl.[2] B01J *8/00;* **F01N** *3/15*

U.S. Cl. 422—177 **3 Claims**



1. apparatus for the purification of exhaust gases from an internal combustion engine comprising a housing for a noble metal catalyst, which noble metal catalyst is protected from catalyst poisons contained in exhaust gas from an internal combustion engine and emanating from the fuel used in said engine, said housing being fitted into the exhaust gas line of the internal combustion engine, wherein the catalyst comprises an inert carrier, having a washcoat being capable of absorbing the catalyst poisons, and being deposited on the entire length thereof, and a catalytically active coating deposited on part of the washcoat, the catalytically active coating essentially consisting of noble metal being deposited only on the rearward part of the catalyst in the direction of the exhaust gas flow, and the forward portion of the washcoat, being free from catalytically active coating and serving as the absorbant, extending to a length of at least about 2.5 cm.

4,134,734

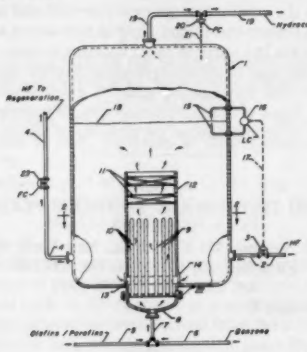
DETERGENT ALKYLATION REACTOR

George R. Winter, III, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 6, 1977, Ser. No. 858,040

Int. Cl.[2] B01J *8/00, 1/00;* **C07C** *3/12*

U.S. Cl. 422—224 **3 Claims**



1. A unitary contacting and settling system for the reaction of hydrocarbons using a homogeneous catalyst which comprises:

(a) a vertically aligned cylindrical vessel which has a cylindrical internal volume and an internal surface, the vessel being divided into upper and lower portions at a horizontal plane passing through the vertical midpoint of the internal volume of the vessel;

(b) a vertically aligned cylindrical reaction tube having an internal volume and which is concentric with the vertical central axis of the vessel and located in the lower portion of the vessel, with the reaction tube having an open upper end and a lower end which is secured to the internal surface of the vessel, and with a liquid passage means providing communication between the internal volume of the reaction tube and the lower portion of the internal volume of the vessel which is external to the reaction tube being located in a circular pattern around the lower end of the reaction tube;

(c) a plurality of vertically aligned reactant distribution conduits extending upward into the reaction tube for at least one-third the height of the reaction tube, each of the reactant distribution conduits having a plurality of reactant outlets located at various elevations above the liquid passage means, the conduits communicating with at least one reactant conduit located outside the vessel;

(d) a liquid mixing means located within the reaction tube above the reactant distribution conduits;

(e) a first liquid transfer conduit communicating with the internal volume of the vessel at a point below the upper end of the reaction tube;

(f) a second liquid transfer conduit communicating with the internal volume of the vessel at a point below the upper end of the reaction tube; and,

(g) a third liquid transfer conduit communicating with the internal volume of the vessel at a point within the upper portion of the vessel.

4,134,735

SULFUR RECOVERY PLANT

James L. Johnnie, Long Beach, and Peter J. DeKluyver, Fullerton, both of Calif., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 25, 1977, Ser. No. 845,017

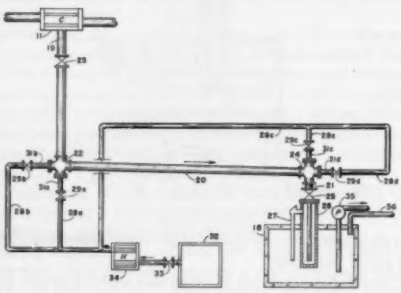
Int. Cl.[2] B08B *5/00, 7/04, 9/02;* **C01B** *17/02*

U.S. Cl. 422—188 **4 Claims**

1. In a sulfur recovery plant comprising a vessel in which

liquid sulfur is formed, sulfur piping including a plurality of direction-changing connections extending from said vessel to a sulfur seal leg adapted to maintain a gas seal between said piping and a sulfur accumulator into which liquid sulfur from said seal leg empties, and valve means in said sulfur piping for isolating selected sections thereof, the improvement comprising;

(a) inert gas valve means at each direction changing connection of said sulfur piping;



(b) a pressurized liquefied inert gas supply means including piping extending from said supply means to each of said inert gas valve means; and

(c) heating means on the inert gas piping for heating said pressurized liquefied inert gas to gasify same whereby plugs forming in said sulfur piping can be subjected to pressure from said pressurized inert gas to remove said plugs.

4,134,736

STEAM-POLYMER SEPARATION APPARATUS

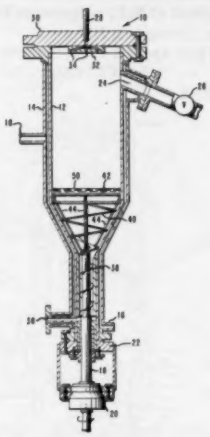
Leon F. Hammond, Jr., Lugoff, S.C., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

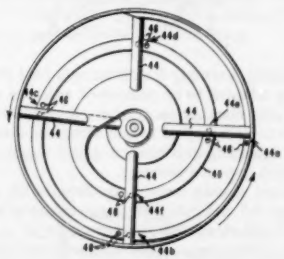
Filed Feb. 22, 1978, Ser. No. 880,075

Int. Cl.[2] B01D *47/16, 1/24*

U.S. Cl. 159—3 **4 Claims**

1. In an apparatus for separating steam from viscous polymer including an upright tubular vessel having an outlet adjacent the bottom thereof, a transfer screw having a rotatable drive shaft extending through said bottom, a spiral ribbon flight extending upward from said screw and plurality of radially spaced struts interconnecting said spiral ribbon flight and said transfer screw, the improvement comprising: said ribbon flight having a plurality of holes therethrough between its upper and





lower surfaces at locations adjacent the locations where the struts connect to said spiral ribbon flight.

4,134,737

PROCESS FOR PRODUCING HIGH-PURITY COAL

Ralph T. Yang, Middle Island, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 510,360, Sep. 30, 1974, abandoned. This application Feb. 2, 1976, Ser. No. 654,355

Int. Cl.[2] C10L *9/10;* **C10B** *57/00*

U.S. Cl. 44—1 R **7 Claims**

1. A process for the production of high-purity coal to reduce or eliminate impurities therein which comprises:

(a) digesting the coal in a caustic solution to solubilize at least a portion of said impurities and to react the caustic with other impurities to form acid soluble products;

(b) separating the caustic solution and dissolved impurities from the coal;

(c) treating the digested coal in a mineral acid other than nitric acid to dissolve said acid soluble products;

(d) separating the treated coal from said mineral acid and impurities dissolved therein;

(e) thereafter treating the coal with nitric acid to remove metallic sulfide impurities remaining in said coal; and

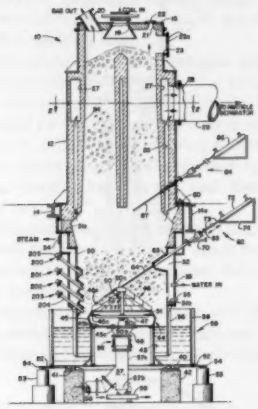
(f) recovering a purified coal from said treatments characterized by having, by weight, respectively not more than 0.1% ash, 0.02% Fe, 0.02% Si, 1.5% total sulfur and 0.1% pyritic sulfur.

4,134,738

AUTOMATED POKING SYSTEM FOR COAL GASIFIER

Dellason F. Bress, Murray Hill, and Joseph N. Conover, New Providence, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 10, 1978, Ser. No. 895,030
Int. Cl.[2] C10J 3/32
U.S. Cl. 48—85.2 24 Claims



1. A pokerod assembly for agitating a coal bed comprising;
a housing adapted to be positioned adjacent to a coal bed;
an elongated member reciprocally disposed in said housing;
actuation means coupled to said elongated member for selectively extending and retracting said member respectively from and into said housing;
temperature sensing means associated with said elongated member for measuring the temperature at a selected location of said elongated member; and
position sensing means associated with said elongated member for measuring the position of said member during the reciprocal movement of said member relative to said housing,
said actuation means selectively extending and retracting said elongated member into and from said coal bed to agitate the coal bed, to detect clinkers in the coal bed, and to measure the temperature of the coal bed.

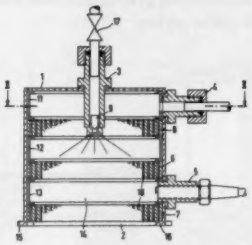
4,134,739

STARTING DEVICE FOR A REFORMED GAS GENERATOR

Peter Gulden, Erlangen; Friedrich Kozdon, Spardorf; Eugen Szabo de Bucs; Walter Kusebauch, both of Erlangen; Helmut Forster, Neunkirchen; Mathias Schnicke, Uttenreuth; Heinz Christoph; Berthold Pfadenhauer, both of Nuremberg, and Gerald Edinger, Berlin, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 21, 1977, Ser. No. 779,905
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1976, 2614673
Int. Cl.[2] C10G 9/04
U.S. Cl. 48—107 11 Claims

1. In combination with a reformed gas generator in which atomized or evaporated, liquid hydrocarbon containing fuel is catalytically reacted with a gas containing oxygen at an elevated temperature to form a fuel gas particularly useful in the operation of internal combustion engines, an improved starting device comprising:
(a) a housing which is small as compared to the reaction chamber of the gas generator, said housing having an outlet coupled to the inlet of the gas generator;
(b) a gas permeable burner plate disposed within said housing with its edges in contact therewith;
(c) a fuel ignition nozzle at least partially disposed within said housing such that the fuel sprayed thereby will cover nearly the entire surface of one side of said burner plate;
(d) a heat resistant, gas permeable terminating plate filling the outlet of said housing, a combustion chamber being formed between said terminating plate and the other side of said burner plate;



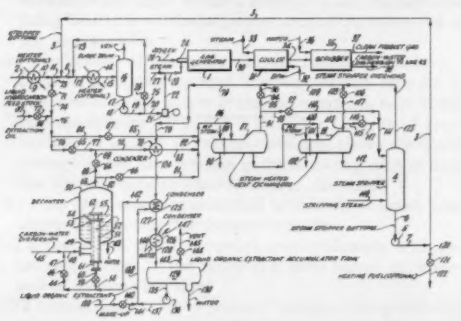
(e) an ignition device disposed in said combustion chamber;
(f) an air inlet; and
(g) means for supplying air from said air inlet to said housing such that said air is introduced into said combustion chamber along with said atomized fuel through said burner plate.

4,134,740

METHOD FOR ENERGY UTILIZATION IN PRODUCING SYNTHESIS GAS AND RECOVERING UNCONVERTED CARBON

Charles P. Marion, Mamaroneck, N.Y.; Harold C. Kaufman; James F. Beall, both of Houston, Tex.; John M. Brady, Missouri City, Tex.; Michael M. Dach, Houston, Tex.; George M. Gulko, Houston, Tex., and Dennis R. Shipman, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,362
Int. Cl.[2] C10J 1/00
U.S. Cl. 48—197 R 28 Claims



1. In a process for the partial oxidation of a hydrocarbonaceous feed, slurry of carbonaceous fuel, or mixtures thereof, with a free oxygen-containing gas in the reaction zone of a free-flow noncatalytic gas generator at a temperature in the range of about 1300° to 3500° F. and a pressure in the range of about 1 to 300 atmospheres in the presence of a temperature moderator in a partial oxidation gas generator to produce a gaseous stream comprising H_2, CO, H_2O and at least one gas from the group CO_2, N_2, Ar, H_2S, CH_4, and COS, and containing particulate carbon; and cooling and cleaning the process gas stream with water to produce a carbon-water dispersion, the improved method for energy utilization in producing said gaseous stream and in the recovery of said unconverted carbon comprising;

(1) mixing said carbon-water dispersion with sufficient liquid organic extractant preheated by indirect heat exchange in a heat exchange or condensing zone as specified in (5) so as to produce in a decanting zone a bottoms stream of clarified water and a separate pumpable liquid ovehead stream of carbon/liquid organic extractant/water dispersion;

(2) mixing the carbon/liquid organic extractant/water dispersion with extraction oil, separating said mixture in a vaporizing operation into a mixture of steam and vaporized liquid organic extractant and a separate residue dispersion of carbon in extraction oil containing liquid organic extractant and water;

(3) introducing the residue dispersion from (2) into the upper portion of a steam stripping zone, and introducing from 0 to 100 volume % of said mixture of steam and vaporized liquid organic extractant from (2) into the upper portion of said steam stripping zone; and passing a stream of stripping steam into the lower portion of said steam stripping zone in counterflow with said liquid residue dispersion;

(4) removing a gaseous overhead mixture of steam and vaporized liquid organic extractant from said stripping zone, and removing a separate pumpable bottoms dispersion of particulate carbon in extraction oil;

(5) mixing together said gaseous overhead mixture from said stripping zone with any remaining portion of said mixture of steam and vaporized liquid organic extractant from the vaporizing operation in (2); and cooling said gaseous mixture and condensing out the water and liquid organic extractant contained therein by heat exchange in at least two separate heat exchange or condensing zones in series with a different coolant in each zone; wherein liquid organic extractant is the coolant in one of said heat exchange or condensing zones, air or water is the coolant in another zone, and the coolant for any remaining heat exchange or condensing zone is selected from the following group:

(a) at least a portion of the carbon/liquid organic extractant/water dispersion overhead stream from the decanting zone in (1), (b) at least a portion of extraction oil for mixing in (2), and (c) mixtures of (a) and (b); and

(6) collecting the condensed water and liquid organic extractant in an accumulator tank and separating same by gravity; and introducing at least a portion of the liquid organic extractant plus any make-up liquid organic extractant into said heat exchange or condensing zone in (5) as the coolant, and recycling the liquid organic extractant heated in (5) to (1).

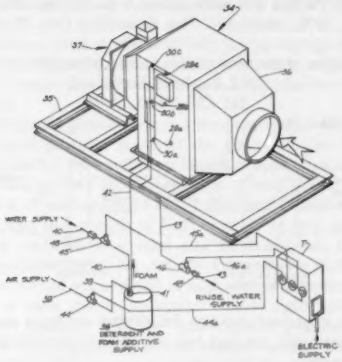
4,134,741

FOAM CLEANING SYSTEM FOR AN ELECTROSTATIC PRECIPITATOR

Carl A. Elsbernd, and Wendell P. Spurgin, Cincinnati, Ohio, assignors to United Air Specialists, Inc., Cincinnati, Ohio

Filed Sep. 28, 1977, Ser. No. 837,551
Int. Cl.[2] B03C *3/78, 3/88*
U.S. Cl. 55—13 **8 Claims**

1. A multiple stack of two-stage electrostatic precipitator modules, each module being comprised of a housing including top, bottom, and side walls, and an ionizer and collecting cell located within said housing; a pre-filter at the front, receiving end of said housing and through which pre-filter air to be treated passes before first being subjected to the ionizer and then to the collecting cell, and an after-filter at the rear, discharge end of said housing, said pre-filter and said after-filter being sufficiently open to permit air to pass therethrough and sufficiently closed so as to provide, with said top, bottom and side walls, a reservoir for the temporary containment of a bath of foam; each of said housings including an open space above said ionizer and said collecting cell; foaming means to create an initial stream of cleansing foam; first conduit means for conducting said initial stream from said foaming means towards said open spaces; dividing means connected to said first conduit means so as to divide said initial stream of foam into substantially equal segments while allowing for the effect of gravity on such division; said first conduit means being of sufficient length to fully develop the foam characteristics of said initial stream before it reaches said dividing means; and second conduit means extending from said dividing means for discharging said segments into said open spaces so as to temporarily fill



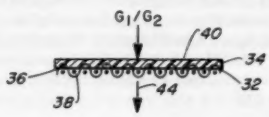
each of said housings with baths of foam which are substantially equal; means to introduce a rose solution into said open spaces; and drain means in each of said housings for the eventual discharge of said foam, rinse solution and any contaminants loosened by said foam and rinse solution.

4,134,742

GAS SEPARATION MEMBRANES

William J. Schell, Long Beach, Calif., assignor to Envirogenic Systems Company, El Monte, Calif.

Filed Jun. 6, 1977, Ser. No. 803,638
Int. Cl.[2] B01D *13/00, 53/22*
U.S. Cl. 55—16 **10 Claims**



1. A gas separation composite membrane comprising:

a polymeric, permselective membrane exhibiting a percentage shrinkage from casting through removal of solvent, attached to

a flexible, synthetic gas permeable, woven, griege goods fabric support exhibiting a percentage shrinkage during casting of the membrane differing from that of the membrane by no more than ±30% and the membrane is anchored to the fabric support and penetrates into the pores of a fabric to a depth of 10% to 40% of the thickness of the fabric.

9. A method of separating gases comprising the steps of:

feeding a gas mixture to a first side of the membrane defined in claim 1;

permeating a portion of the mixture through the membrane; and

recovering a gas permeate from the obverse side of the membrane and residual from the first side of the membrane.

4,134,743
DESICCANT APPARATUS AND METHOD

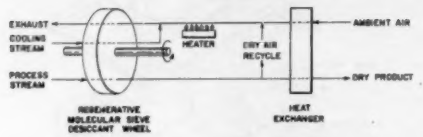
Robert A. Macriss, Deerfield; William F. Rush, Arlington Heights, and Sanford A. Weil, Chicago, all of Ill., assignors to Gas Developments Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 314,400, Dec. 2, 1972, Pat. No. 3,844,737, which is a continuation-in-part of Ser. No. 24,373, Mar. 31, 1970, abandoned. This application Oct. 29, 1974, Ser. No. 518,783

The portion of the term of this patent subsequent to Oct. 29, 1991, has been disclaimed.

Int. Cl.[2] B01D *53/06*

U.S. Cl. 55—34 **9 Claims**



4. An improved process for drying air by a continuous, atmospheric pressure and low pressure drop process comprising the steps:

continuously passing the air to be dried through an adsorbent body consisting essentially of thin sheets or layers of fibrous material containing about 10 to about 90% by weight of a finely divided crystalline molecular sieve material for a time sufficient to permit the molecular sieve material to adsorb moisture from said air to an acceptable moisture level and removing dry product air in a first phase; and

regenerating said adsorbent body by continuously passing countercurrent to the drying stream through said adsorbent body in a second phase, a heated regeneration stream removing the moisture from said adsorbent body, exhausting the regeneration stream and continuously passing a cooling stream through said adsorbent body between said regeneration stream and the introduction of the process stream.

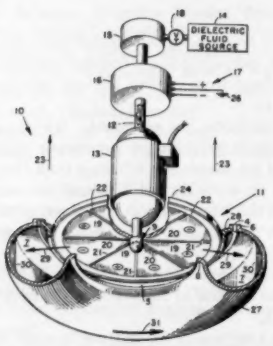
4,134,744
FINE PARTICULATE CAPTURE DEVICE

Victor S. Peterson, Brunswick, and Robert D. Siewert, Sandusky, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Nov. 8, 1973, Ser. No. 414,042

Int. Cl.[2] B03C *3/78*

U.S. Cl. 55—118 **9 Claims**



1. Apparatus for capturing particles in a gas, said apparatus comprising:

a disc including at least two sections, each section bearing an electrical potential of opposite polarity to an adjacent section;

means for rotating said disc about an axis perpendicular to its surface;

means for directing a dielectric collector fluid to the center of said disc;

means for controlling the flow rate of said dielectric fluid such that it flows in a continuous film toward the edge of said disc, and

means for collecting the fluid being centrifuged from said disc, said dielectric fluid being inert with respect to said sections and non-reactive with respect to said particles.

4,134,745
AIR CLEANING APPARATUS

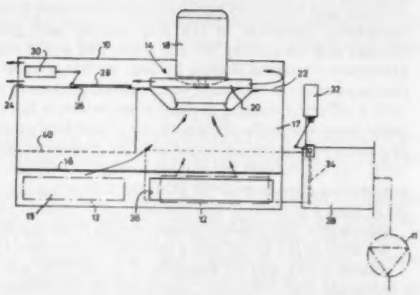
Joachim Fürstenberg, Aichwald, Fed. Rep. of Germany, assignor to LTG Lufttechnische GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 12, 1977, Ser. No. 758,723

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1976, 2601016

Int. Cl.[2] B01D *46/04*

U.S. Cl. 55—303 **6 Claims**



1. An air cleaning apparatus in which the entire quantity of filtered air is reversed within said apparatus without introduction of ambient air to clean a filter, comprising in combination:

a filter box with at least one dirty air inlet and at least one clean air outlet;

first air transport means, located at least partially within said filter box;

an intermediate wall having a first opening and defining within said filter box two chambers disposed on opposite sides thereof, one of said chambers forming a clean air chamber provided with said at least one clean air outlet, the other of said chambers forming a dirty air chamber provided with said at least one dirty air inlet, said first air transport means being arranged to draw air from said at least one dirty air inlet through said first opening to said at least one clean air outlet;

a filter disposed across said dirty air chamber between said at least one air inlet and said first air transport means;

said intermediate wall having a second opening for the flow of air between said clean air chamber and said dirty air chamber;

first closure means positioned and arranged with respect to said second opening and movable between a first closed position for an air cleaning operation in which dirty air drawn into said dirty air chamber through said at least one dirty air inlet is moved through said filter into said clean air chamber and out said at least one clean air outlet by said first air transport means and a second open position for a filter cleaning operation to close said at least one clean air outlet and to permit air flowing through said filter from said dirty air chamber to said clean air chamber

to be returned through said second opening to said dirty air chamber;

second air transport means, attached to said filter box, for aspirating air from the interior of said filter box at least partially through said air filter during the filter cleaning operation; and

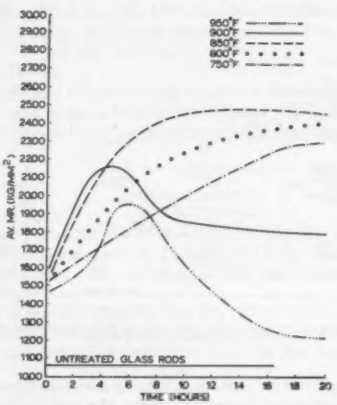
second closure means for controlling air flow from said filter box to said second air transport means; whereby, during filter cleaning operation, said first and second closure means are opened and at least portions of the air transported by said first air transport means is returned through the filter and is at least partially aspirated by said second air transport means.

4,134,746

METHOD OF STRENGTHENING GLASS ARTICLES

Leon Levene, Thornhill, and R. Wayne McClung, Cambridge, both of Canada, assignors to Domglas Inc., Mississauga, Canada

Filed Dec. 7, 1977, Ser. No. 858,217
Claims priority, application Canada, Aug. 18, 1977, 285170
Int. Cl.[2] C03C *15/00*; C03B *27/00*; C09K *50/00*
U.S. Cl. 65—30 E **10 Claims**



1. A process for strengthening the surface of an article of a soda-lime glass in which a solution of potassium fluoride containing a metal acetate which prevents etching of glass by fluoride ions, the ratio of potassium fluoride to metal acetate in the solution being in the range of from 10 to 400:1, is applied to the surface of the article at a temperature in the range of from 200° F to 900° F, the article is maintained at an elevated temperature below the strain point of the glass to provide an exchange of potassium ions for the sodium ions in the glass to a depth sufficient to produce a substantial compressive surface layer, the article is cooled and washed to remove any residue from the surface.

4,134,747

METHOD OF FORMING TRANSPARENT AND OPAQUE FORTIONS IN A REDUCING ATMOSPHERE GLASS

Joseph E. Pierson, and Stanley D. Stookey, both of Painted Post, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 16, 1977, Ser. No. 778,161
Int. Cl.[2] C03C *15/00*; C03B *32/00*; C03C *3/04*
U.S. Cl. 65—30 R **36 Claims**

1. A method for making a glass article wherein a portion thereof exhibits opacity and a portion thereof is transparent which comprises the steps:

(a) melting a batch under reducing conditions for a glass consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 1.5–3% F, 0.001–0.03% total of at least one metal selected from the group consisting of Ag, Au, Cu, Pd, and Pt, 0.1–1% Sb_2O_3 and/or 0.01–1% SnO, the total Sb_2O_3 + SnO not exceeding about 1%, and the remainder SiO_2;

(b) forming said melt into a transparent glass article containing submicroscopic particles of at least one metal selected from the group of Ag, Au, Cu, Pd, and Pt dispersed therein;

(c) exposing a portion of said article to high energy or actinic radiation at ambient temperature to develop a transparent latent image therein containing a large number of metal nuclei;

(d) heating said glass article to a temperature between about the transformation range of the glass and the softening point thereof for a sufficient length of time to cause nucleation and growth of microcrystals of NaF in said exposed portion of said article of insufficient size to scatter visible light, and the growth of NaF crystals on said submicroscopic particles of at least one metal selected from the group consisting of Ag, Au, Cu, Pd, and Pt in that portion of said article not exposed to high energy or actinic radiation of such size as to scatter visible light and impart opacity thereto, whereby said exposed portion of said article is transparent and said portion of said article not exposed to high energy or actinic radiation is opaque; and then

(e) cooling said article to ambient temperature.

15. A method for making a glass article wherein a portion thereof exhibits opacity and a portion thereof is transparent which comprises the steps:

(a) melting a batch under reducing conditions for a glass consisting essentially, in weight percent on the oxide basis as calculated from the batch, of about 10–20% Na_2O, 1.5–3% F, 0.001–0.03% total of at least one metal selected from the group consisting of Ag, Au, Cu, Pd, and Pt, 0.1–1% Sb_2O_3 and/or 0.01–1% SnO, the total Sb_2O_3 + SnO not exceeding about 1%, and the remainder SiO_2;

(b) forming said melt into a transparent glass article containing submicroscopic particles of at least one metal selected from the group of Ag, Au, Cu, Pd, and Pt dispersed therein;

(c) exposing a portion of said article to high energy or actinic radiation while the entire article is heated to a temperature between about 200°–410° C. for a sufficient length of time to cause nucleation and growth of microcrystals of NaF in said exposed portion of the article of insufficient size to scatter visible light, and the growth of NaF on said submicroscopic particles of at least one metal selected from the group of Ag, Au, Cu, Pd, and Pt in said unexposed portion of said article to a sufficient size to scatter visible light, whereby said exposed portion of said article is transparent and said unexposed portion of said article is opaque; and then

(d) cooling said article to ambient temperature.

4,134,748

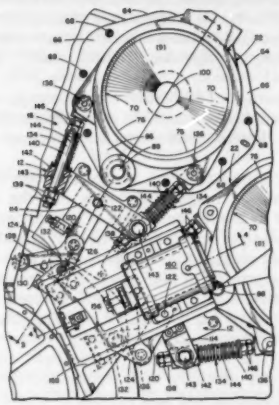
LINKAGE FOR OPERATING A MOLD FOR A GLASS MAKING MACHINE

Kenneth R. Hileman, Anderson, Ind., assignor to Lynch Corporation, Detroit, Mich.

Filed Jun. 13, 1977, Ser. No. 805,997
Int. Cl.[2] C03B *9/00*
U.S. Cl. 65—237 **5 Claims**

1. A mechanism for operating molds of a glass molding machine, said mechanism comprising, in combination, a fixed support, a movable support rotatably mounted on said fixed support, a plurality of glass forming molds operatively mounted on said movable support, a plurality of glass molding stations on said fixed support for molding glass articles in said molds, means for rotatably indexing said movable support and each of said molds past each of said stations in first and second revolutions for molding said glass articles, linkage means for normally holding each of said molds in a closed position during said entire first revolution and a portion of said second revolu-

tion, means at one of said stations for opening each of said molds one time during said second revolution, and means



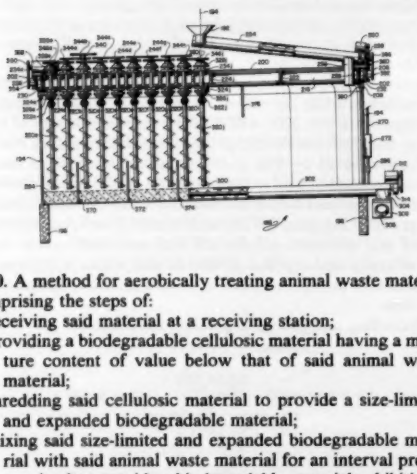
following said one station and during said second revolution for closing each of said opened molds.

4,134,749

ORGANIC WASTE MATERIAL DIGESTION APPARATUS AND SYSTEM

John E. Houser, Marion, and Ralph J. Kramer, Delaware, both of Ohio, assignors to Aerotherm, Inc., Delaware, Ohio

Filed May 17, 1977, Ser. No. 797,627
Int. Cl.[2] C05F *11/08*
U.S. Cl. 71—9 **14 Claims**



10. A method for aerobically treating animal waste material comprising the steps of:

receiving said material at a receiving station;

providing a biodegradable cellulosic material having a moisture content of value below that of said animal waste material;

shredding said cellulosic material to provide a size-limited and expanded biodegradable material;

mixing said size-limited and expanded biodegradable material with said animal waste material for an interval predetermined to provide a biodegradable material exhibiting a first value of biochemical oxygen demand and a bulk density and moisture content optimized for the efficient thermophilic aerobic reaction thereof induced by the passage of oxygen laden atmospheric air therethrough;

transferring said material of first value biochemical oxygen demand to a digester to provide a bulk quantity of said material supported upon a surface of said digester and extending about a given perimeter thereof;

passing oxygen laden atmospheric air from said surface through said bulk quantity of said material;

simultaneously agitating said bulk quantity of said material in a manner promoting the generally alternating vertical movement of said material from said supporting surface to the uppermost surface of said bulk material as well as the migration thereof toward a point of removal from said digester and to simultaneously promote a progressive dimunition of said first value biochemical oxygen demand said agitation including the agitation of said bulk quantity of said material at a position substantially over said point of removal;

removing said migrated material of lowest value biochemical oxygen demand substantially only from the lowermost level of said bulk thereof at said point of removal substantially at the center of said digester; and

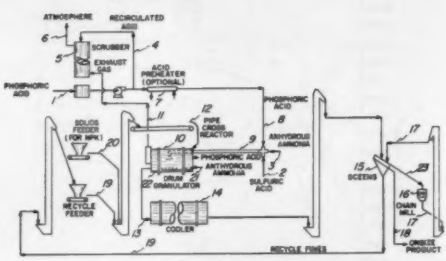
transferring said removed material to a receiving station.

4,134,750

GRANULAR AMMONIUM PHOSPHATE SULFATE AND UREA-AMMONIUM PHOSPHATE SULFATE USING A COMMON PIPE-CROSS REACTOR

Melvin M. Norton, Sheffield, and Byron R. Parker, Florence, both of Ala., assignors to Tennessee Valley Authority, Muscle Shoals, Ala.

Continuation of Ser. No. 818,602, Jul. 25, 1977, now Defensive Publication No. T 969,002. This Application Dec. 19, 1977, Ser. No. 861,585
Int. Cl.[2] C05B *7/00*; C05C *9/00*; C01B *25/28*
U.S. Cl. 71—29 **8 Claims**



FLOWSHEET OF THE GRANULATION PILOT-PLANT FOR PRODUCTION OF GRANULAR FERTILIZER USING PIPE-CROSS REACTOR

1. An improved process for preparing granular substantially dust-free ammonium phosphate sulfates of a particle size distribution eminently suitable for subsequent bulk blending with other fertilizer values, which process consists essentially of simultaneously supplying a stream of anhydrous ammonia to the common pipe section of a pipe-cross reactor; simultaneously supplying a stream of phosphoric acid to the cross section of said pipe-cross reactor, said phosphoric acid having a P_2O_5 content in the range from about 30 to about 52 percent by weight and a free water content ranging from about 15 to 55 percent by weight; simultaneously supplying a stream of sulfuric acid to said cross section of said pipe-cross reactor, said sulfuric acid containing from about 78 to about 98 percent H_2SO_4, said streams of phosphoric acid and sulfuric acid contacting said anhydrous ammonia introduced into said common pipe section of said pipe-cross reactor at said cross section of said pipe-cross reactor, at a temperature sufficiently high so that additional water is not necessary for continuous operation; subsequently introducing the reaction product resulting from contacting said anhydrous ammonia, phosphoric acid, and sulfuric acid into the vapor tube extension of said pipe-cross reactor to ensure continued intimate contact therebetween; subsequently discharging from the downstream end of said vaporization tubular extension an essentially anhydrous molten ammonium phosphate sulfate into the upper end of an inclined rotating drum; therein maintaining a bed of rolling discrete particles of ammonium phosphate sulfate; withdrawing ammonium phosphate sulfate material from the lower end of said inclined rotating drum; introducing said withdrawn material into cooling means; withdrawing the resulting cooled material

from said cooling means; introducing said material withdrawn from said cooling means into sizing means; returning particles of predetermined size from said sizing means into the upper end of said drum and withdrawing from said sizing means granular particles of ammonium phosphate sulfate as product; said process characterized by the fact that there is a reduction in moisture content ranging from about 0.1 to about 1.2 percent by weight of said ammonium phosphate sulfate by said step of removing same from the lower end of said inclined rotating drum to the step of recovery of same as product, said percent reduction in moisture content based on the moisture content of said ammonium phosphate sulfate as it leaves the lower end of said inclined rotating drum and caused by evaporation while said material is being cooled.

4,134,751
HERBICIDAL COMPOUND, HERBICIDAL COMPOSITION CONTAINING THE SAME AND METHOD OF USE THEREOF

Ryuzo Nishiyama, Takatsuki; Kanichi Fujikawa, Kyoto; Rikuo Nasu, Kusatsu; Itaru Shigehara, Kusatsu, and Nobuyuki Sakashita, Kusatsu, all of Japan, assignors to Ishihara Sangyo Kaisha Ltd., Osaka, Japan

Filed Apr. 14, 1977, Ser. No. 787,640
Claims priority, application Japan, Apr. 14, 1976, 51/42952
Int. Cl.[2] A01N *9/22;* **C07D** *213/64*
U.S. Cl. 71—94 **15 Claims**

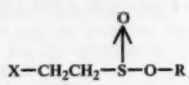
15. A method for controlling noxious weeds in the presence of cultivated crops which comprises applying a herbicidally effective amount of a herbicidal composition of claim **8.**

4,134,752
PLANT GROWTH REGULATORS

Kurt H. G. Pilgram; Earl K. Jackson, and Willy D. Kollmeyer, all of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 253,356, May 15, 1972, Pat. No. 3,876,678, which is a continuation-in-part of Ser. No. 162,709, Jul. 14, 1971, abandoned. This application Dec. 10, 1974, Ser. No. 531,260
Int. Cl.[2] A01N *9/14, 5/00*
U.S. Cl. 71—103 **7 Claims**

1. A method for regulating plant growth which comprises applying to the locus to be treated, an effective amount of a compound of formula I:



I

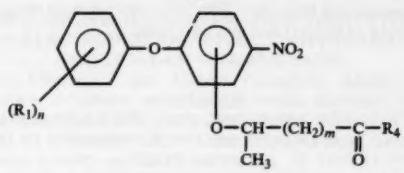
wherein X is bromine or chlorine and R is hydrogen, alkyl of up to 20 carbon atoms, phenyl, alkenyl of up to 8 carbon atoms or alkynyl of up to 4 carbon atoms.

4,134,753
HERBICIDAL AGENTS

Gerhard Hörlein, Frankfurt am Main; Hubert Schönowsky, Rödermark; Hermann Bieringer, Eppstein, Taunus, and Peter Langelüddeke, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

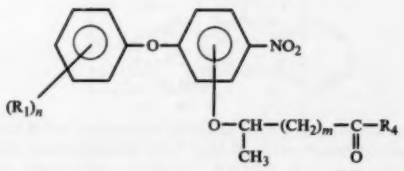
Filed Jul. 18, 1977, Ser. No. 816,700
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1976, 2632581
Int. Cl.[2] A01N *9/24;* **C07C** *51/12*
U.S. Cl. 71—108 **14 Claims**

1. A compound of the general formula



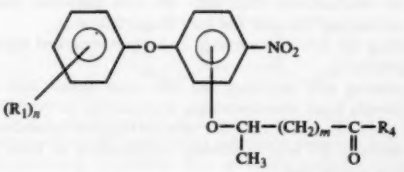
wherein
R_1 is Cl or Br;
R_4 is (C_1–C_8) alkoxy which may be monosubstituted or disubstituted by halogen and/or (C_1–C_2) OH; or OCat. with Cat. denoting a cation of Na, K or NH_4;
m is 0 or 1 and
n is 1 or 2.

11. A herbicidal composition consisting essentially of an inert carrier and a herbicidally effective amount of a compound of the formula



wherein
R_1 is Cl or Br;
R_4 is (C_1–C_8) alkoxy which may be monosubstituted or disubstituted by halogen and/or (C_1–C_2) alkoxy; OH; or OCat. with Cat. denoting a cation of Na, K or NH_4;
m is 0 or 1 and
n is 1 or 2.

13. The method of combating weed growth in a field planted with crops which comprises applying a herbicidally effective amount of a composition containing as its essential active ingredient a compound of the formula



wherein
R_1 is Cl or Br;
R_4 is (C_1–C_8) alkoxy which may be monosubstituted or disubstituted by halogen and/or (C_1–C_2) alkoxy; OH, or OCat. with Cat. denoting a cation of Na, K or NH_4;
m is 0 or 1 and
n is 1 or 2.

4,134,754
METHOD OF COMBATING WILD OATS

Otto L. Hoffmann, Shawnee, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 23, 1978, Ser. No. 889,575
Int. Cl.[2] A01N *9/20, 9/02*
U.S. Cl. 71—111 **4 Claims**

1. In the method of selectively killing wild oats by post-emergent application of barban to wild oats in the second leaf stage, the improvement consisting of applying to wild oat plants an effective amount of a composition comprising one

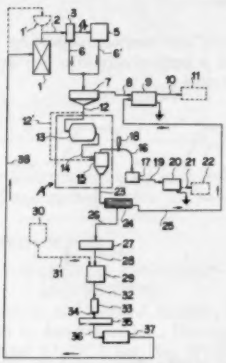
part by weight of barban and at least four parts by weight of a polyunsaturated long chain fatty acid selected from the group consisting of linoleic and linolenic acids.

4,134,755

METHOD FOR REMOVING ZINC TYPE METALS AND COMPOUNDS IN DUST RECOVERY PROCESS IN IRON MANUFACTURE

Koichi Maeda, 1-16-23, 603 Zenpukuji, Suginami-Ku, Tokyo, Japan

Filed Aug. 22, 1977, Ser. No. 826,972
Claims priority, application Japan, Aug. 27, 1976, 51-101526
Int. Cl.[2] C22B 7/04
U.S. Cl. 75—25 9 Claims



1. A method for wet removal of zinc type metals and compounds in a process for purifying and recovering dusts collected in an iron manufacturing furnace, which comprises the steps of:

wet-concentrating dusts containing particles of iron and zinc type material collected from the iron manufacturing furnace,

pulverizing the particles of zinc material so the zinc particles are substantially finer than the iron particles, thereby earmarking the zinc and iron by particle size,

feeding the wet concentrated and size earmarked dusts together,

separating and removing the zinc type metals and compounds from iron-containing components in the dusts by wet separation conducted under a negative pressure,

processing the iron containing components to form solid iron pieces, and

recycling the iron pieces to the iron manufacturing furnace.

4,134,756

PERMANENT MAGNET ALLOYS

Makoto Ushijima, Kumagaya, Japan, assignor to Hitachi Metals, Ltd., Japan

Filed Sep. 6, 1977, Ser. No. 830,499
Claims priority, application Japan, Sep. 7, 1976, 51-106317
Int. Cl.[2] C22C 30/02
U.S. Cl. 75—122 5 Claims

1. A precipitation hardening type permanent magnet alloy having a columnar crystal structure and having a maximum energy product greater than or equal to 9.0 MGOe, which consists essentially of: 7 to 12% Al, 10 to 20% Ni, 28 to 30% Co, 1 to 7% Cu, 3.0 to 6.0% Ti, 0.02 to 0.2% C, 0.1 to 1.0% S and 0.1 to 4.0% Nb the balance being Fe; and the Nb to Ti ratio satisfies the following formula:

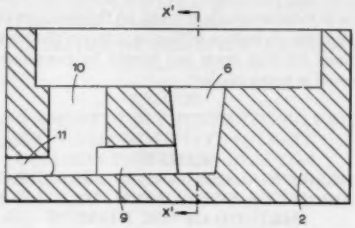
$$52.5 \leqq 7\,Nb + 10\,Ti \leqq 63.$$

4,134,757

METHOD OF TREATING MOLTEN METAL

Maurice Roberts, Reigate, England, assignor to Materials & Methods Limited, Surrey, England

Filed Jul. 29, 1977, Ser. No. 820,332
Claims priority, application United Kingdom, Feb. 23, 1977, 7576/77
Int. Cl.[2] C21C 7/00
U.S. Cl. 75—130 R 5 Claims



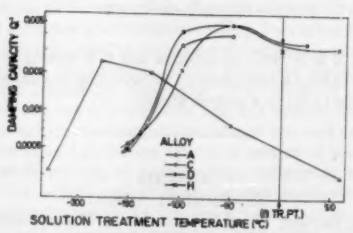
1. A process for the treatment of molten metal by the introduction of a reactive additive into the molten metal which comprises introducing said molten metal into a reaction chamber through at least one entry channel which overlaps with a side of the reaction chamber to provide at least one slot at the end of said entry channel opening into the chamber over at least a substantial portion of the length of the side of the chamber above the bottom thereof, causing the molten metal to flow through said slot thereby producing at least one cascade of molten metal which flows downwards into said chamber, introducing said reactive additive into said chamber above the cascade whereby said additive is rapidly drawn under the molten metal by the flow of the cascade, and recovering the treated molten metal.

4,134,758

TITANIUM ALLOY WITH HIGH INTERNAL FRICTION AND METHOD OF HEAT-TREATING THE SAME

Nobuyuki Nagai, Kobe; Yasuo Moriguchi, Nishinomiya; Yoshimasa Itoh, Kobe; Shoji Ueda, Nagasaki; Yorimasa Takeda, Isahaya, and Akira Hiromoto, Nagasaki, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Kobe Steel, Ltd., both of Kobe, Japan

Filed Apr. 26, 1977, Ser. No. 790,944
Claims priority, application Japan, Apr. 28, 1976, 51-49056
Int. Cl.[2] C22C 14/00; C21D 1/00
U.S. Cl. 75—175.5 2 Claims



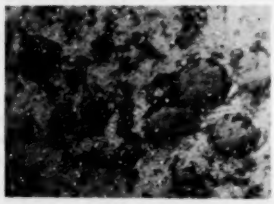
1. A heat-treated titanium alloy with a high internal friction suitable for rotating blades of turbomachines and consisting essentially of, by weight, 5.5–6.75% Al, 1–5% V, 1–5% Mo, V plus Mo being greater than 6%, and the balance being Ti, the alloy having been solution heat treated at a temperature not lower than 125° C. below the β transformation point of the alloy, the alloy having a minimum damping capacity of about 5×10^{-3}.

4,134,759

LIGHT METAL MATRIX COMPOSITE MATERIALS REINFORCED WITH SILICON CARBIDE FIBERS

Seishi Yajima; Josaburo Hayashi; Mamoru Omori, and Hideo Kayano, all of Ohnuki, Japan, assignors to The Research Institute for Iron, Steel and Other Metals of the Tohoku University, Sendai, Japan

Filed Dec. 13, 1976, Ser. No. 750,102
Claims priority, application Japan, Sep. 1, 1976, 51-103738
Int. Cl.[2] B22F *3/00*
U.S. Cl. 75—204 7 Claims



1. A method for producing aluminum, aluminum alloy or magnesium alloy composite material reinforced with continuous silicon carbide fibers, which comprises arranging 80–20% by volume of the continuous silicon carbide fibers containing 0.01–40% by weight of free carbon obtained by baking spun fibers consisting mainly of an organosilicon high molecular weight compound in 20–80% by volume of fused aluminum matrix, to react the free carbon contained in the silicon carbide fibers with aluminum or the metal elements contained in the above described aluminum alloy or magnesium alloy which easily form carbides, to form carbides of these metals and to make the wettability of the silicon carbide fibers to the metal matrix high.

4,134,760

TRIBO MODIFIED TONER MATERIALS VIA ACYLATION

Harry W. Gibson, Penfield; Frank C. Bailey, Webster, both of N.Y., and Joseph L. Mincer, Lewisville, Tex., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1974, Ser. No. 500,773
Int. Cl.[2] G03G *9/10, 13/08*
U.S. Cl. 96—1 SD 20 Claims

11. An electrostatographic imaging process comprising the steps of providing an electrostatographic imaging member having a recording surface, forming an electrostatic latent image on said recording surface, and contacting said electrostatic latent image with a developer composition comprising finely-divided toner particles electrostatically clinging to the surface of carrier particles, said toner particles having an average particle diameter of between about 4 and about 20 microns, said toner particles comprising a colorant and a polymer selected from the group consisting of styrene-alkylmethacrylate and styrene-alkylacrylate containing hydroxyl or amino groups in the pendant ester functions, said polymer having been exposed to systematic chemical alteration of said pendant ester functions by acylation with an acylating agent to convert said hydroxyl groups to esters and said amino groups to amides thereby providing toner particles characterized as having controlled triboelectric charging properties, whereby at least a portion of said finely-divided toner particles are attracted to and deposited on said recording surface in conformance with said electrostatic latent image.

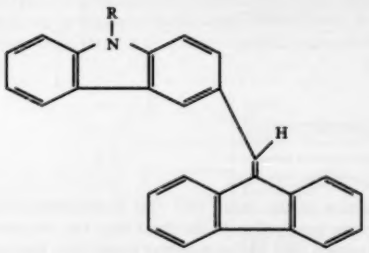
4,134,761

3-(9-FLUORENYLIDENE)CARBAZOLE DERIVATIVES AND ELECTROPHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL CONTAINING SAME

Mitsuo Okazaki, Tama; Akihiro Yamaguchi, Asaka; Akio Kozima, Yokohama, and Masaomi Sasaki, Kawasaki, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Apr. 7, 1977, Ser. No. 785,570
Claims priority, application Japan, Apr. 19, 1976, 51-44736
Int. Cl.[2] G03G *5/04;* C07D *209/86*
U.S. Cl. 96—1.5 R 4 Claims

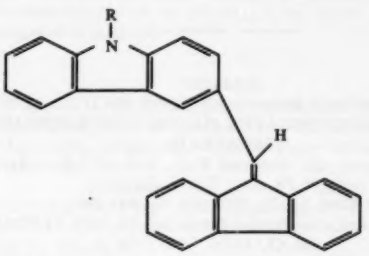
1. 3-(9-fluorenylidene)carbazole derivatives having the formula (I):



(I)

wherein R is a lower alkyl group of from 1 to 4 carbon atoms.

3. An electrophotographic light-sensitive material comprising an electrically conductive support, a photoconductive layer on said electrically conductive support, said photoconductive layer having a thickness of 3 to 50μ, said photoconductive layer consisting essentially of from 30 to 80% by weight of a charge transport compound having the formula



(I)

wherein R is alkyl having 1 to 4 carbon atoms, from 5 to 50% by weight of charge generating substance selected from the group consisting of cyanine dye, phthalocyanine, disazo, indigoid, quinacridone, polynuclear quinone, bis-benzimidazole, perylene, methine dye, azo dye, xanthene dye and violanthrone, and the balance is an insulating organic high molecular weight compound.

4,134,762

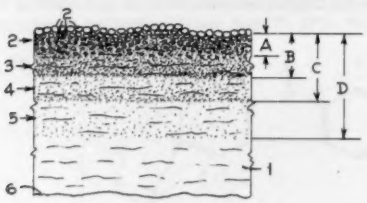
SELECTIVE PHOTOCONDUCTOR-BINDER COATING OF ABSORBENT SURFACES

Kenneth A. Metcalfe, Lockleys, and Alwyn S. Clements, Largs Bay, both of Australia, assignors to The Commonwealth of Australia, Canberra, Australia

Filed Jun. 14, 1977, Ser. No. 806,503
Claims priority, application Australia, Jul. 2, 1976, 6513/76
Int. Cl.[2] G03G *5/087, 5/082*
U.S. Cl. 96—1.5 R 6 Claims

1. A sensitized sheet for use in electrophotography in which the sheet is formed of fiber bonded together to be pervious, and a coating on said sheet constituted by a deposit of a photoconductor and two resins applied by milling the photoconductor with a first hydrophobic resin selected from the group consisting of a styrene-butadiene copolymer, a silicon resin, a hydro-

carbon resin, an acrylic polymer resin, and a polyvinyl acetal-butyral resin, and a second resin selected from the group consisting of a short oil modified alkyd resin, an acrylic modified alkyd resin, a vinyl toluene acrylic copolymer, a chlorosulphonated polyethylene, a polyvinyl chloride-acetate copolymer, a melamine-formaldehyde resin, a polyester resin, a terpene resin, chlorinated polyphenyls and aryl sulphonamide-formaldehyde resins, said second resin have a higher dielectric constant that the said photoconductor and said first resin, and a solvent for the resins, said photoconductor having a minimum penetration of the sheet, said first hydrophobic resin having a greater penetration of the sheet than the photoconductor, said second resin having a greater penetration than said first resin, said solvent having a greater penetration than both of said resins, whereby said resins have a higher dielectric constant than the dark conditioned photoconductor but lower than said sheet in the area beyond the penetration of said resins, and whereby said resins are bonded to the said photoconductor and said fiber, and the sheet has a progressively increasing dielectric constant from the photoconductor surface to the back of the sheet.

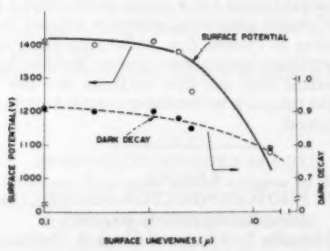


4,134,763

SELENIUM-BASE PHOTOSENSITIVE MATERIALS FOR ELECTROPHOTOGRAPHY HAVING SUPER-FINISHED SUBSTRATE

Itaru Fujimura, and Katutoshi Endo, both of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,256
Claims priority, application Japan, Jul. 23, 1976, 51-87234
Int. Cl.[2] G03G *5/04, 8/00*
U.S. Cl. 96—1.5 R **9 Claims**



1. Improvement in an electrophotographic element comprising an electrically conductive metal substrate having a surface coated with and completely covered by a photoconductive layer of photoconductive selenium or photoconductive selenium alloy, wherein the improvement consists of:

the roughness of said surface of said substrate is in the range of from about 0.3 to about 2.0 microns and said surface of said substrate is free of long periodical undulations, said substrate having been prepared by superfinishing said surface of said substrate.

4,134,764

SEMICONDUCTIVE AND SENSITIZED PHOTOCONDUCTIVE COMPOSITIONS

William A. Huffman, Minneapolis; Stephen P. Birkeland, White Bear Lake, and Kevin P. O'Leary, Roseville, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 556,400, Mar. 7, 1975, Pat. No. 4,052,209. This application Nov. 19, 1976, Ser. No. 743,171
Int. Cl.[2] G03G *5/09*
U.S. Cl. 96—1.6 **2 Claims**

1. An article comprising semiconductive composition comprising a polymeric binder which is not an organic, photoconductive, polymer binder and a dye comprising at least two quinoid benzene rings linked through a bridging moiety selected from the group consisting of cyclopropane, cyclobutane and $=C=C=_n$ wherein n is 1 or 2, and wherein any ring carbons of the cyclopropane and cyclobutane bridging moieties not directly bonded to quinoid benzene rings are bonded to oxygen atoms to complete a carbonyl group said dye being present in sufficient concentration so that the conductive properties of the semiconductive composition differ by at least 20% from the conductive properties of said binder without said dye coated onto an organic photoconductive binder layer which has been coated onto a substrate.

2. The article of claim 1 wherein said polymeric binder is an organic photoconductive binder.

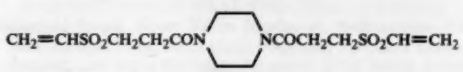
4,134,765

VINYLSULPHONE HARDENER

Norman A. Smith, Hornchurch, England, assignor to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 734,782, Oct. 22, 1976, Pat. No. 4,088,648. This application Jan. 11, 1978, Ser. No. 868,554
Int. Cl.[2] C08F *116/06;* C09H *7/00;* G03C *1/30*
U.S. Cl. 96—111 **10 Claims**

1. A process for cross-linking hydrophilic colloids which contain amino, imino and/or hydroxyl groups characterised in that the vinylsulphone compound of



is incorporated into the colloid to effect cross-linking thereof.

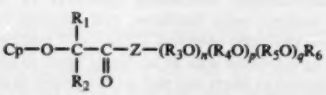
4,134,766

DYE IMAGE FORMING PROCESS

Shoji Kikuchi, Hachioji; Hajime Wada, Tokyo; Takaya Endo, Hino; Hidetaka Deguchi, Tama; Toshiki Komaita, and Wataru Ishikawa, both of Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1977, Ser. No. 843,704
Claims priority, application Japan, Oct. 23, 1976, 51-127426
Int. Cl.[2] G03C *7/00, 1/40*
U.S. Cl. 96—55 **16 Claims**

1. A method of processing an imagewise-exposed light-sensitive silver halide color photographic material by a developer, which method comprises conducting said processing in the presence of an aromatic primary amine developing agent and a coupler represented by the following formula (I):



(I)

wherein C_p represents a monovalent residue obtained by removing one hydrogen atom from the active methylene of a phenol or naphthol cyan coupler; R_1 and R_2 individually represent hydrogen, halogen, nitro, hydroxy, cyano, carboxy, an

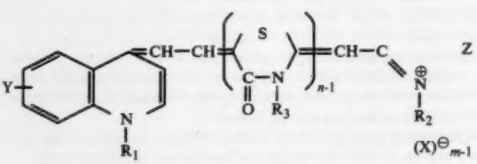
amino group, sulfo, an alkyl group, an alkenyl group, an aryl group, a pyridinyl group, a quinonyl group, a thienyl group, a piperidyl group, an imidazolyl group, a morpholino group, a furyl group, a thiazolyl group, an oxazolyl group, a benzothiazolyl group, a benzoxazolyl group, a benzimidazolyl group, a furanyl group, an alkoxy group, an aryloxy group, an arylthio group, an acylamino group, an arylazo group, a carbamoyl group, an acyl group, an acyloxy group, a sulfonamido group, a sulfamoyl group or a sulfonyl group; R_3, R_4 and R_5 individually represent an alkylene group, an arylene group or an aralkylene group; R_6 represents hydrogen, or an alkyl group, an aryl group or an aralkyl group; Z represents a simple bond, oxygen, imino, alkylene, aralkylene or arylene; and n, p and q individually are zero or an integer of 1 to 10, provided that n, p and q do not simultaneously equal zero.

4,134,767
SILVER HALIDE PHOTOSENSITIVE MATERIAL FOR COLOR PHOTOGRAPHY

Kaiichiro Sakazume, Hino; Noboru Fujimori, Hino; Eiichi Sakamoto, Hino, and Hidehiko Ishikawa, Odawara, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 706,768, Jul. 19, 1976, abandoned, which is a continuation of Ser. No. 517,049, Oct. 22, 1974, abandoned. This application Mar. 28, 1977, Ser. No. 781,668
Claims priority, application Japan, Oct. 22, 1973, 48-117808
Int. Cl.[2] G03C *5/32, 1/10, 1/18*
U.S. Cl. 96—60 R **5 Claims**

1. A method of bleaching an imagewise exposed and then developed silver halide photosensitive material for color photography, the photosensitive material comprising a red sensitive silver halide emulsion layer having, in an amount of 0.005 to 0.5 g per mole of silver halide, at least one of the compounds represented by the following general formula:



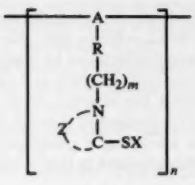
wherein R_1 and R_2 individually stand for substituted or unsubstituted alkyl; R_3 is alkyl or allyl; Y is hydrogen, halogen, alkyl or alkoxy; Z is a group of atoms necessary for forming a substituted or unsubstituted heterocyclic ring, said heterocyclic ring selected from the group consisting of thiazole, benzothiazole, naphthoselenazole, benzoselenazole, naphthothiazole, benzoxazole, and 1-3-dioxolo [4.5-f] benzothiazole; X is an anion; m and n are individually 1 or 2 provided that when m is 1, an inner salt is formed, said method comprising treating said photosensitive material with a bleaching or bleach-fixing solution containing an ethylenediamine tetraacetic acid iron complex salt.

4,134,768
PHOTOGRAPHIC USES OF POLYVINYL-PHENYLMERCAPTO-TETRAZOLES

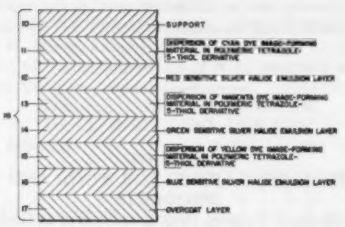
J. Michael Grasshoff, Hudson, and Jerome L. Reid, Wayland, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 718,012, Aug. 26, 1976, abandoned. This application Apr. 1, 1977, Ser. No. 783,552
Int. Cl.[2] G03C *1/76, 1/40, 7/00, 1/48*
U.S. Cl. 96—73 **47 Claims**

1. A photosensitive element comprising a support upon which is coated at least a photosensitive silver halide emulsion layer and a nonphotosensitive layer including a compound



wherein A is an ethylenically unsaturated group which has been polymerized, R is phenylene, and A taken with R is selected from the group consisting of vinylphenyl, acrylamidophenyl, (2-acrylamido-2-methyl)propionamidophenyl, and p-formylphenyl acetal, X is alkali metal or primary, secondary, tertiary or quaternary ammonium, Z represents the


SUPPORT
RED SENSITIVE SILVER HALIDE EMULSION LAYER
GREEN SENSITIVE SILVER HALIDE EMULSION LAYER
BLUE SENSITIVE SILVER HALIDE EMULSION LAYER
OVERCOAT LAYER

atoms and bonds necessary to complete a 1,2,3,4-tetrazole ring, m is 0 or 1 when A taken with R is vinylphenyl and m is 0 when A taken with R is acrylamidophenyl, (2-acrylamido-2-methyl)-propionamidophenyl or p-formylphenyl acetal and n is an integer of at least 100.

4,134,769
OFFSET PRINTING PLATE

Akio Yoshida; Akira Tanaka, and Yasuo Tsubai, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Aug. 5, 1977, Ser. No. 822,192
Claims priority, application Japan, Aug. 10, 1976, 51-95274
Int. Cl.[2] G03C *5/54, 1/48*
U.S. Cl. 96—76 R **8 Claims**

1. An improved offset printing plate which comprises a support, a silver halide emulsion layer on the support and a surface layer containing nuclei for physical development on the emulsion layer, to which surface layer an image formed in said emulsion layer is transferred, characterized in that the silver halide emulsion contains at least one dye selected from the group consisting of betaine type cyanine sensitizing dyes and anion type cyanine sensitizing dyes.

4,134,770
GELATIN-CONTAINING PHOTOGRAPHIC LAYER INCORPORATED WITH HARDENER

Kazuhiro Emoto; Kenji Yabuta; Kiyoshi Yamashita, and Kiyoshi Futaki, all of Nagaokakyo, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Sep. 21, 1977, Ser. No. 835,213
Claims priority, application Japan, Sep. 22, 1976, 51-112866; Nov. 26, 1976, 51-141957
Int. Cl.[2] G03C *1/40, 1/30;* **C09H** *7/00*
U.S. Cl. 96—100 R **14 Claims**

1. A compression comprising gelatin and a hardener of the formula:

$$(CH_2=CH-SO_2-CH_2-CH_2-CO-A-)_n P,$$

wherein each A, which may be either the same or different, is selected from direct bond, —NH— and —O—, P represents an n-valent aliphatic moiety which can be interrupted by a nitrogen atom or phenylene radical, and n is 3 or 4, provided that when A is direct bond the nitrogen atom interrupting said aliphatic moiety can be connected through the direct bond.

12. A method for hardening a gelatin-silver halide photographic emulsion, characterized in that a hardener having the general formula:

$$(CH_2=CH-SO_2-CH_2-CH_2-CO-A)_n-P$$

(wherein each A which may be either the same or different, is selected from direct bond, —NH— and —O—, P represents an n-valent aliphatic moiety which can be interrupted by a nitrogen atom or phenylene radical, and n is 3 or 4, provided that when A is direct bond the nitrogen atom interrupting said aliphatic moiety can be connected through the direct bond, is incorporated in said emulsion.

4,134,771

IMPREGNATING LIQUID FOR WOOD AND WOOD PRODUCTS

Aksel T. Bentsen, Kolding, Denmark, assignor to Gorivaerk AS, Kolding, Denmark

Filed Jul. 1, 1977, Ser. No. 812,064

Claims priority, application Denmark, Jul. 5, 1976, 3032/76

Int. Cl.[2] C08K *5/29*; C09D *5/14*

U.S. Cl. 106—15 R **5 Claims**

1. Impregnating liquid for wood and wood products based on an organic solvent containing a fugicidally active organotin compound and a binder, especially for use in vacuum impregnation, wherein the impregnating liquid contains a reaction product between tributyl tin oxide and one or more naphthenic acids and a non-oxidative drying binder comprising a polydiene resin which is a polymerization product of an unsaturated C_5 fraction from steam cracking or naphtha having an average molecular weight of about 1500.

4,134,772

METHOD OF PRODUCING SOFT PORCELAIN

Tadatoshi Ichiko; Takeo Isono, and Keiichi Mochizuki, all of Nagoyashi, Japan, assignors to Narumi Seito Kabushiki Kaisha, Nagoyashi, Japan

Filed Sep. 15, 1977, Ser. No. 833,677

Claims priority, application Japan, Oct. 21, 1976, 51/125447

Int. Cl.[2] C04B *33/24*

U.S. Cl. 106—45 **6 Claims**

1. A method of preparing soft porcelain, which comprises subjecting to oxidation firing, at a temperature of from 1200° to 1350° C., a shaped green body made of a mixture consisting essentially of

(a) from 15 to 28 percent by weight of β-calcium pyrophosphate, prepared by uniformly calcining bone phosphate at a temperature of from 1000° to 1250° C. to convert it completely to β-calcium pyrophosphate, whereby the production of foam during the oxidation firing is obviated,

(b) from 6 to 18 percent by weight of limestone,

(c) from 5 to 15 percent by weight of sericite,

(d) from 20 to 40 percent by weight of kaolin or mixture of kaolin and Gairome clay,

(e) from 5 to 20 percent by weight of feldspar, and

(f) from 1 to 15 percent by weight of quartz.

4,134,773

METHOD OF ACCELERATED HARDENING AND STRENGTH-INCREASING OF DIFFERENT CEMENTS

Yordan T. Simeonov, and Nikola B. Djabarov, both of Sofia, Bulgaria, assignors to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban, Sofia, Bulgaria

Filed Oct. 3, 1977, Ser. No. 839,044

Claims priority, application Bulgaria, Mar. 11, 1977, 35651

Int. Cl.[2] C04B *7/35*

U.S. Cl. 106—89 **7 Claims**

1. A method for accelerating the hardening and increasing the strength of cements which comprises admixing 100 parts by weight of the cements with water and an admixture comprising from 0.5 to 5 parts by weight of bialuminium pentahydroxychloride, 1 to 12 parts by weight of gypsum, 0.5 to 20 parts by weight of lime and up to 3 parts by weight of an alkali metal or an alkaline earth metal nitrite, at a temperature up to 60° C., and thereafter allowing the mixture to harden at a temperature up to 100° C.

4,134,774

AGGREGATE FOR CONCRETE AND CONCRETE COMPOSITION CONTAINING SAME

Dieter Heese, Bochum; Gerhard Hausberg, Essen-Bresdeney; Hans Lehmann, Goslar; Hans-Joachim Schmidt, Goslar-Hahndorf; Klaus Goldschmidt, and Kyaw Than, both of Essen, all of Germany, assignors to STEAG Aktiengesellschaft, Essen, Germany

Filed Mar. 3, 1977, Ser. No. 774,149

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1976, 2608927

Int. Cl.[2] C04B *7/02*

U.S. Cl. 106—97 **9 Claims**

1. A process for producing concrete blocks of high-compressive strength comprising the steps of:

(a) burning a fossil fuel in an electric power plant boiler to produce a flue gas containing dust particles and sulfur oxides while forming a melting-chamber slag in said boiler;

(b) treating said flue gas with water in the presence of calcium oxide to scrub said particles from said gas and form calcium compounds including calcium sulfite and calcium sulfate in the scrubbing water;

(c) settling said scrubbing water to produce a sludge containing 40 to 50% by weight of said calcium compounds;

(d) removing said slag from said boiler and comminuting same to produce a comminuted slag;

(e) combining the sludge of step (c) with the slag of step (d) in a weight ratio of sludge to slag between 0.1:1 to 1:0.1 to form an aggregate;

(f) mixing the aggregate produced in step (e) with portland cement, with water and with sand or gravel to produce a casting concrete composition, the cement making up about 10% by weight of the aggregate, cement and sand or gravel mixture; and

(g) casting said casting concrete composition into forms to produce blocks and hardening said blocks.

4,134,775

COMPOSITIONS OF SULFUR AND FLY ASH AND SHAPED ARTICLES PRODUCED THEREFROM

Edward J. Schwoegler, 7533 State Line Ave., Munster, Ind. 46321

Filed Feb. 24, 1977, Ser. No. 771,580

Int. Cl.[2] C09K *15/02*

U.S. Cl. 106—286.8 **9 Claims**

1. An article useful as a structural member, a joint between other members, and for purposes requiring hardness and strength, said article consisting essentially of

a three-dimensional matrix of solidified sulfur; and

solid particulate inorganic material distributed through said matrix,

said particulate inorganic material amounting to 20–80% of the weight of the article,

at least a portion of said particulate inorganic material being non-fragmented fly ash, said fly ash amounting to 20-60% of the weight of the article,

the particle size of said particulate inorganic material being in the range of 0.0005-10.0 mm. and the maximum particle size being small in comparison to the minimum dimension of the article;

the article having a hardness significantly greater than that of solidified sulfur along, and a compressive strength superior to that of aged poured concrete.

4. A composition consisting essentially of a uniform dry blend of sulfur; and

at least one solid particulate inorganic material,

said particulate inorganic material amounting to 20–80% of the total composition weight, at least a portion of said particulate inorganic material being nonfragmented fly ash, said fly ash amounting to 20–60% of the weight of the article,

the particles of said particulate inorganic material being in the range of 0.0005–10.0 mm.;

the composition being convertable into shaped articles useful as structural members, joints between other members, and for other purposes, by melting the sulfur and cooling the molten sulfur while said particulate inorganic material is distributed therethrough, such articles having a hardness significantly greater than that of solidified sulfur and a compressive strength superior to aged poured concrete.

4,134,776
EXTERIOR GRADE TITANIUM DIOXIDE COATED MICA

Carl J. Rieger, Yorktown Heights, and Louis Armanini, Pleasantville, both of N.Y., assignors to The Mearl Corporation, Ossining, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,744
Int. Cl.[2] C09C *1/00, 1/34, 1/36*
U.S. Cl. 106—291 **10 Claims**

1. A method of producing an exterior grade TiO_2 coated mica nacreous pigment which comprises (a) treating micaceous particles with a tin compound-containing solution (b) coating said particles with titanium dioxide in the amorphous form by deposition from a titanium compound-containing coating bath, (c) calcining said particles for a time and at a temperature at least equivalent to 950° C. for 30 minutes, and (d) coating the calcined particles with chromium III hydroxide by deposition from a chromium III compound-containing coating bath.

6. An exterior grade TiO_2 coated mica nacreous pigment comprising micaceous particles having on the surfaces thereof a translucent coating of titanium dioxide in the rutile form which has been calcined for a time and temperature at least equivalent to 950° C. for 30 minutes, said translucent coating having a post-calcine coating of chromium III hydroxide thereon.

4,134,777
METHOD FOR RAPID REMOVAL OF CORES MADE OF Y_2O_3 FROM DIRECTIONALLY SOLIDIFIED EUTECTIC AND SUPERALLOY MATERIALS

Marcus P. Borom, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 6, 1977, Ser. No. 839,993
Int. Cl.[2] B22D *29/00*
U.S. Cl. 134—2 **8 Claims**

1. A method for removing a core made of yttria ceramic material having a grain morphology which is characteristic of grains which have undergone partial sintering resulting in a network of narrow interconnecting bridges formed by sintering and which connect adjacent grains and particles, comprising the process steps of:

(a) placing the casting and the core of yttria ceramic material in an autoclave containing an aqueous leaching solution containing a material which is one selected from the group consisting of NaOH and KOH;

(b) heating the casting, yttria ceramic material and leaching solution to a temperature of at least about 200° C.;

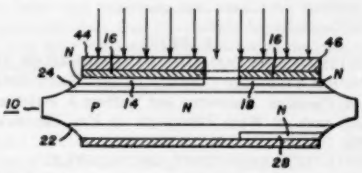
(c) dissolving substantially all of the interconnecting network of ceramic material by chemical attack by the leaching solution, and

(d) removing at least some of the undissolved ceramic material from the casting by the solution agitated by the chemical reaction.

4,134,778
SELECTIVE IRRADIATION OF THYRISTORS

William W. Sheng, Auburn; Y. S. Edmund Sun, Liverpool, and Edward G. Tefft, Auburn, all of N.Y., assignors to General Electric Company, Auburn, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,190
Int. Cl.[2] H01L *21/263, 7/54, 21/22*
U.S. Cl. 148—1.5 **26 Claims**



17. A method for improving the electrical characteristics of bi-directional thyristors of the type including first and second laterally spaced apart current carrying regions in a single semiconductor body separated by a first boundary region, each said first and second regions having first, second, third, and fourth alternating conductivity type layers therein, at least one of said layers comprising a base layer and first and second electrodes for providing ohmic contact to said regions, said method comprising:

irradiating said boundary region with semiconductor crystal lattice-damaging high energy particles for forming additional charge carrier recombination sites at least in said base layer in said boundary region.

4,134,779
IRON-BORON SOLID SOLUTION ALLOYS HAVING HIGH SATURATION MAGNETIZATION

Ranjan Ray, Randolph, and Ryusuke Hasegawa, Morristown, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 21, 1977, Ser. No. 808,589
Int. Cl.[2] C22C *38/00*
U.S. Cl. 148—121 **6 Claims**

1. A ferromagnetic material, having a saturation magnetization ranging from 16.6 to 20.0 k Gauss, a hardness ranging from 425 to 919 kg/mm^2 and an ultimate tensile strength ranging from 206 to 360 ksi and having a single phase formed in body centered cubic structure, consisting essentially of about 4 to 12 atom percent boron, balance essentially iron plus incidental impurities.

4,134,780
EXPLOSIVE COMPOSITION FLOWABLE OVER WIDE TEMPERATURE RANGE

George H. Barnett, North Balwyn, Australia, assignor to ICI Australia Limited, Victoria, Australia

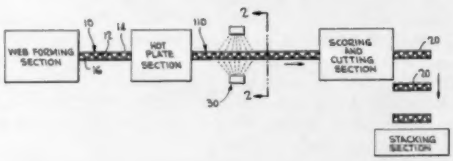
Filed Oct. 31, 1977, Ser. No. 847,052
Claims priority, application Australia, Nov. 23, 1976, PC8241; Apr. 29, 1977, PC9921
Int. Cl.[2] C06B *33/12*
U.S. Cl. 149—40 24 Claims

1. An explosive composition of a non-aqueous oxidizer salt type which is characterized in that it assumes a molten form at temperatures in a range from −10° C. to +90° C. and comprises as a first component a product resultant of treatment of a mixture comprising at least one oxygen-releasing salt material and at least one compound selected from a class of melt-soluble fuel materials, of which at least a part of said fuel material is capable of forming a melt with at least a part of said oxygen-releasing salt material and wherein the temperature at which such a melt is formed is no greater than is the melting point of either the said fuel material or the said oxygen-releasing salt material, so as to form a melt; and as a second component a further amount of at least one oxygen-releasing salt material such that the said first component constitutes from 20 to 60% w/w of the said composition and the said second component constitutes from 40 to 80% w/w of the said composition.

4,134,781
METHOD FOR CONTROLLING WARP IN THE MANUFACTURE OF CORRUGATED PAPERBOARD

Ronald A. Carstens, Anacortes, and William J. Butcher, Battleground, both of Wash., assignors to Key Chemicals, Inc., Seattle, Wash.

Filed May 3, 1977, Ser. No. 793,397
Int. Cl.[2] B29C *27/00;* B32B *31/00;* B31F *1/20*
U.S. Cl. 156—64 11 Claims



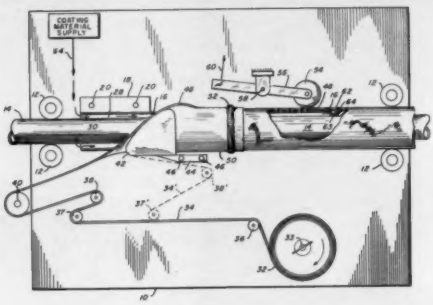
1. In a method for the manufacture of corrugated paperboard sheets comprising the steps of forming a continuous composite paperboard web composed of a corrugated paper medium interposed between a top paper liner and a bottom paper liner and provided with a moisture-laden heat-setting adhesive material at the juxtaposed surfaces thereof, setting said adhesive material to firmly bond together said juxtaposed surfaces by heating said paperboard web to a temperature sufficiently high to effect vaporization of said moisture from said adhesive material, cutting the resulting bonded paperboard web into individual paperboard sheets, and collecting said paperboard sheets into stacks;

the improvement whereby warp of said paperboard sheets may be effectively controlled comprising the step of applying to at least one side of said bonded paperboard web prior to its being cut into individual paperboard sheets and before it has cooled from its bonding temperature to a temperature below about 130° F a quantity of moisture regulated so as to effect an adjustment of the relative moisture exchange rates of said top and bottom liners of said bonded paperboard web with the ambient atmosphere to the point which will result in a counterbalancing of the net effect of the warp-producing conditions developed within said bonded paperboard web prior to and during its bonding operation, the achievement of said counterbalance point being indicated by a consistent substantially flat condition of said paperboard sheets in said stacks.

4,134,782
METHOD FOR SIMULTANEOUSLY APPLYING TO AN EXTENDED CYLINDRICAL OBJECT A COATING AND A PLASTIC FILM WRAPPING TO RETAIN THE COATING

Clemens F. Straughan, Tulsa, Okla., assignor to C F S Corporation, Tulsa, Okla.

Continuation-in-part of Ser. No. 447,651, Mar. 4, 1974, abandoned, which is a division of Ser. No. 142,452, May 12, 1971, Pat. No. 3,813,272. This application Oct. 20, 1975, Ser. No. 623,652
Int. Cl.[2] B29D *27/04, 23/00*
U.S. Cl. 156—79 4 Claims



1. A method of placing a coating of a foamed plastic retained on an extended conduit comprising the steps of:

(a) feeding said conduit into and through a concentric tubular mandrel spaced from said conduit and supported on a frame;

(b) moving said conduit and said frame relative to each other;

(c) feeding a continuous strip of said film in a direction colinear with said conduit;

(d) wrapping said film about said mandrel and said conduit to form longitudinal joined contiguous edges of said film forming, downstream thereof, an unsupported cylindrical tubular form surrounding said conduit and of selected diameter larger than said conduit to form said annulus space;

(e) sealing the edges of said film;

(f) moving said tubular form in synchronism with the movement of said conduit; and

(g) injecting into the annular space between said conduit and said unsupported tubular form of film the chemical materials required to form, in situ and downstream of said mandrel, and to fill said annulus with said foamed plastic.

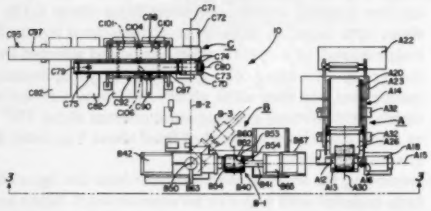
4,134,783
TIRE BUILDING SYSTEM

Paul E. Appleby, Cuyahoga Falls; Christopher E. Christie, Akron; John H. Gerstenmaier, Akron; Thomas F. Minter, Akron, and Edwin S. Woodhall, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 696,610, Jun. 16, 1976, abandoned, which is a continuation of Ser. No. 266,884, Jun. 28, 1972, abandoned. This application Sep. 16, 1977, Ser. No. 833,796
Int. Cl.[2] B29H *17/16, 17/20*
U.S. Cl. 156—396 2 Claims

1. Apparatus for building a radial ply tire having a given bead diameter and a given toroidal crown diameter comprising a solitary band building drum having a fixed non-collapsible continuous cylindrical surface; means permanently fixed mounting said band building drum for rotation about an axis fixed in space, said band building drum having a plurality of

closely spaced orifices distributed in rows and columns along and around said cylindrical surface, and airflow means mounted within said drum connected to flow air under pressure through said orifices between the inner surface of a cylindrical precarcass band on said drum and the outer cylindrical surface of said drum; solitary carcass-shaping means providing three diametral conditions including a first condition being of less diameter than said bead diameter and an intermediate condition providing an axially and circumferentially firm and continuous cylindrical support surface having a diameter materially larger than the diameter of said band building drum and having a radially inwardly extending shoulder at each axial end of said support surface, means mounting said carcass-shaping means for coaxial alignment and axially spaced apart relation with respect to said band building drum; and band transfer means cooperable with said orifices and said airflow means to release a precarcass band from said drum and operable to carry said precarcass band between said drum and said carcass-shaping means without change in its cylindrical form and size as built on said drum and having three predetermined positions, said band transfer means comprising a pair of coaxial rings, means mounting the respective said rings for movement symmetrically toward and away from each other, each ring having a plurality of radially movable plungers spaced angularly about and extending radially through the respective ring and movable inwardly and outwardly thereof, a piston means mounted on each plunger and responsive to air pressure thereon to urge said plungers radially inwardly relatively of said rings, yieldable cup means secured on the radially inner end of each plunger for engagement with the exterior surface of said precarcass band, adjustable stop means on each said plunger outwardly of the respectively associated ring limiting radially inward travel of said plungers to dispose said cup means in fixed closely spaced radial relation with said drum, said cup means being sufficient in number and in location to support said precarcass band in cylindrical shape and size substantially identical to its cylindrical shape and size when on said band building drum while being moved from the first to the intermediate and from the intermediate to the third of said three positions, said plungers being displaceable radially outwardly in response to expansion of said carcass-shaping means from said first condition to said intermediate condition thereby to expand a central portion of a band placed by the transfer means around the shaping means.



4,134,784

MANDREL ASSEMBLY FOR FORMING AN INTERNALLY VENTED FILLER NECK HOSE

Melvin C. Badberg, Lincoln, Nebr.; Thomas G. Hutchins, Wadsworth, Ohio; Roy W. Olsen, and James W. Zachmeyer, both of Lincoln, Nebr., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 643,974, Dec. 24, 1975, abandoned. This application May 4, 1977, Ser. No. 793,583

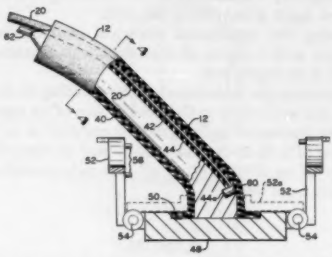
Int. Cl.[2] B29C *1/16;* **B32B** *31/02*

U.S. Cl. 156—423 **4 Claims**

1. A mandrel assembly for forming and vulcanizing an internal vent filler neck as would be mounted between a fueling port and a fuel tank, the filler neck characterized by a vent hose integrally vulcanized within the bore of a larger diameter filler neck hose, said mandrel assembly comprising:

A. a vent hose mandrel of a length and diameter for mounting an unvulcanized length of vent hose thereon and having means at one end for limiting the axial movement of the hose on the mandrel; and

B. a filler neck mandrel of a length and diameter for mounting an unvulcanized length of filler hose thereon, said filler neck mandrel having a longitudinal groove running the substantial length thereof that terminates in a recess at one end, said groove and recess adapted for cradling the vent hose and receiving the vent hose limiting means respectively such that the outside longitudinal length of the vent hose is in intimate contact with the inside surface of the filler hose bore.



4,134,785

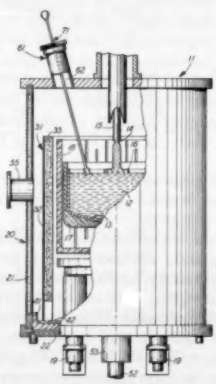
REAL-TIME ANALYSIS AND CONTROL OF MELT-CHEMISTRY IN CRYSTAL GROWING OPERATIONS

Robert J. Lavigna, Bath; Charles W. Pearce, Allentown, and Raymond E. Reusser, Bethlehem, all of Pa., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 13, 1977, Ser. No. 787,135

Int. Cl.[2] B01J *17/18*

U.S. Cl. 156—601 **8 Claims**



1. A method of controlling the resistivity of each of a plurality of single-crystalline ingots of desired size which may be successively grown from a melt which may be successively reconstituted as desired for each ingot grown, wherein the melt contains polycrystalline material and an impurity, and wherein the improvement comprises the steps of:

maintaining at least a portion of the melt in its melted state for each ingot grown from the melt which portion of melt may be retained and reconstituted for a successive ingot after an ingot is grown;

withdrawing a sample of the maintained melt, the composi-

tion of the melt varying as a single-crystalline ingot is grown from the melt and varying in accordance with the freezing of the melt into an ingot;

cooling the sample to solidify it into a polycrystalline structure;

determining an electrical characteristic of the polycrystalline sample, which characteristic is indicative of the level of the impurity of the maintained melt and which level of the impurity is indicative of the resistivity of a single-crystalline ingot grown from the melt;

comparing the determined electrical characteristic of the sample with a value of that electrical characteristic desired in an ingot; and

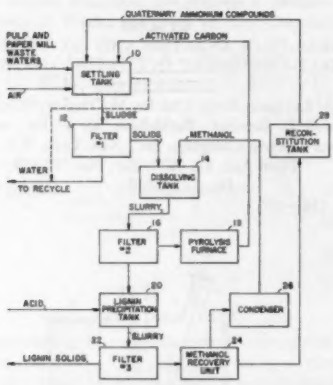
reconstituting the maintained melt according to the comparison and according to the desired size of an ingot by adding an amount of polycrystalline material or of the impurity or of both to the maintained melt to control the resistivity of each of a plurality of single-crystalline ingots grown from the melt.

4,134,786

PROCESS FOR PURIFICATION OF WASTE WATER PRODUCED BY A KRAFT PROCESS PULP AND PAPER MILL

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of and Marshall F. Humphrey, Duarte, Calif.

Filed Dec. 15, 1976, Ser. No. 750,798
Int. Cl.[2] D21C *11/00*
U.S. Cl. 162—14 **11 Claims**



1. A method of treating waste water containing in the water chemical oxygen demand (COD) matter including at least lignin, the steps comprising:

mixing one of the water miscible, organic quaternary ammonium compounds selected from a group consisting of mono methyl trialkyl ammonium acetate, dimethyl distearyl ammonium phosphate and trimethyl cetyl ammonium chloride with said waste water substantially on the basis of one weight equivalent of quaternary ammonium compound to one weight equivalent of lignin contained in said waste water, to form lignin-quaternary ammonium compounds which are insoluble in the water;

mixing two to five times as much activated carbon with said waste water and the matter contained therein as the weight per unit volume of the chemical oxygen demand (COD) matter in said waste water, to adsorb at least insoluble matter in said water, including said lignin-quaternary ammonium compounds,

allowing said mixture of the waste water, the lignin-quaternary ammonium compounds which are insoluble in the water and the activated carbon to stand until settleable matter, including the water insoluble lignin-quaternary ammonium compounds and the activated carbon in said waste water settled as a sludge and there is supernatant water above said sludge,

separating said supernatant water from the sludge, and

extracting from said sludge the lignin from the lignin-quaternary ammonium compounds contained therein.

4,134,787

DELIGNIFICATION OF LIGNOCELLULOSIC MATERIAL WITH AN ALKALINE LIQUOR CONTAINING A CYCLIC AMINO COMPOUND

Robert C. Eckert, Kent, Wash., assignor to International Paper Company, New York, N.Y.

Filed May 26, 1978, Ser. No. 910,164
Int. Cl.[2] D21C *3/02, 3/20*
U.S. Cl. 162—72 **8 Claims**

1. A process for the delignification of a lignocellulosic material, which comprises the steps of:

(a) digesting the lignocellulosic material with an aqueous, alkaline pulping liquor containing from about 0.1% to about 10% based on the weight of oven-dried lignocellulosic material, of a cyclic amino compound selected from the group consisting of phenazine, dihydrophenazine, quinoxaline, and their alkyl, alkoxy, hydroxy, carboxy and amino derivatives at a temperature of from about 150° C. to about 200° C. for a period of from about 5 to about 480 minutes; and then

(b) removing the aqueous pulping liquor from the lignocellulosic material with water or an aqueous wash liquor inert to the lignocellulosic material to obtain a delignified cellulosic material.

4,134,788

DRAINAGE BLADE HAVING A RAISED, SMOOTHLY ROUNDED BEARING SURFACE

Otis R. Witworth, Appleton, Wis., assignor to Menasha Corporation, Neenah, Wis.

Filed May 25, 1978, Ser. No. 909,597
Int. Cl.[2] D21F *1/54*
U.S. Cl. 162—352 **7 Claims**

1. A drainage blade for a Fourdrinier machine adapted to support the wire of such machine and to facilitate removal of water from a paper web on said wire, the upper surface of said blade having a front land portion in a nearly horizontal position and a rear foiling portion declining from the horizontal at an angle of up to about 5°,

a bearing surface at and overlapping the line of junction between the land portion and the foiling portion, said bearing surface being smoothly rounded and the top position of the bearing surface being raised above the plane of the land surface and above the plane of the foiling surface by a height between about 0.003 inch and about 0.008 inch,

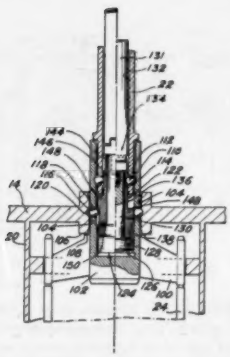
said land portion being inclined upwardly to the leading edge of the blade from its junction with the bearing surface by an angle of at least ½ degree.

4,134,789

METHOD FOR REFUELLING A NUCLEAR REACTOR AND DEVICE FOR CARRYING OUT SAID METHOD

Gilles Aubert, Orsay, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Continuation of Ser. No. 552,922, Feb. 25, 1975, abandoned.
This application Feb. 2, 1977, Ser. No. 764,982
Claims priority, application France, Mar. 1, 1974, 74 07077
Int. Cl.[2] G21C *19/20*
U.S. Cl. 176—30 5 Claims



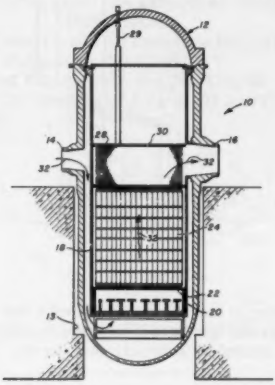
1. A device for refuelling a nuclear reactor, comprising a pressure vessel having a top closure head with a core constituted by a plurality of vertical fuel assemblies an upper internal structure above said reactor core comprising at least one top plate whose periphery rests on a support ledge of said pressure vessel, a plurality of hollow vertical guide tubes in which the control rods are slidably fitted, each control rod being constituted by a plurality of absorber pins coupled by a rigid structure to the lower end of a drive shaft, said shaft being adapted to traverse the top plate aforesaid through an aperture formed opposite to each guide tube and said closure head, a cylindrical canister open at the upper end cemented to said rigid structure, radial ribs fixed on said canister, the wall of said canister being provided with bored recesses for normally accommodating a first series of balls which are capable of projecting from said canister and penetrating to a partial extent into first cooperating notches formed in the top plate aforesaid, wherein said drive shaft is hollow and provided at the lower end which penetrates into said canister with bored recesses for normally accommodating a second series of balls which are capable of projecting from said drive shaft so as to penetrate to a partial extent into second cooperating notches formed in the internal wall of said canister, and wherein said device comprises a movable member with cam means thereon for selectively engaging the balls of the first and second series, one series at a time, for causing alternate penetration of the balls of the first series into the first cooperating notches so as to couple the absorber pins with said upper internal structure and the balls of the second series into the second cooperating notches so as to couple said drive shaft with said canister, whereby when engagement of the cam means is shifted from one series of balls to the other penetration of the engaged balls into their cooperating notches will simultaneously take place with accommodation of the non-engaged balls into their bored recesses.

4,134,790

FUEL LOCK DOWN DEVICE

Frank Bevilacqua, Windsor, and Malcolm D. Groves, Suffield, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 4, 1977, Ser. No. 784,085
Int. Cl.[2] G21C *3/12*
U.S. Cl. 176—50 9 Claims



1. In a nuclear reactor, structure for holding a fuel assembly in place on a core support plate, comprising:

a. a horizontal core support plate;

b. a plurality of fuel assembly alignment pins vertically and rigidly attached to said plate;

c. said assembly, vertically disposed above said plate and having a substantially flat horizontal lower end fitting;

d. a plurality of fuel assembly alignment posts extending vertically downward from said end fitting toward said plate, each of said posts being in close parallel proximity to one of said pins;

e. spring means connected between each of a first set of at least one but less than all of said posts and a first set of said pins in respective close proximity therewith, for downwardly biasing said first set of posts relative to said first set of pins and for horizontally biasing each of said first set of posts away from each said respective pin in a direction and with a force sufficient to cause a second set of at least one of the remainder of said posts to firmly abut a second set of at least one of the remainder of said pins whereby a frictional resistance to vertical movement is achieved between said second set of posts and said second set of pins.

4,134,791

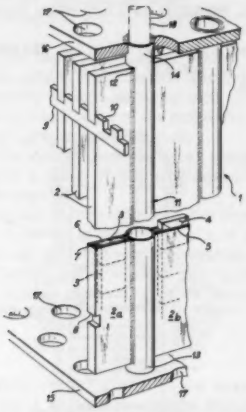
PLATE-TYPE FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Jacques Delafosse, Gif-sur-Yvette, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 10, 1977, Ser. No. 805,385
Claims priority, application France, Jun. 11, 1976, 76 17750
Int. Cl.[2] G21C *3/30*
U.S. Cl. 176—75 14 Claims

1. A plate-type fuel assembly for nuclear reactors comprising two vertically spaced apart support plates having aligned apertures therethrough, a stack of parallel fuel plates disposed vertically in uniformly spaced relation between said support plates, each of said fuel plates being surrounded by cladding and being joined together and maintained in position with respect to each other by connecting means which extend at right angles to the plane of the fuel plates and are disposed at intervals in the vertical direction on the lateral edges of said plates, a plurality of said fuel plates having hollow sleeves rigidly fixed thereto and extending vertically in the plane of

said plates, said sleeves being uniformly spaced in the transverse direction of said plates and means for securing said fuel



plates relative to said support plates with said hollow sleeves aligned with said apertures in said support plates to permit the passage of control rods through said sleeves.

4,134,792

SPECIFIC BINDING ASSAY WITH AN ENZYME MODULATOR AS A LABELING SUBSTANCE

Robert C. Boguslaski; Robert J. Carrico, both of Elkhart, Ind., and James E. Christner, Ann Arbor, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 6, 1976, Ser. No. 748,005
Int. Cl.[2] G01N *33/00, 31/14*
U.S. Cl. 195—99 **19 Claims**

1. In a specific binding assay method for determining a ligand in a liquid medium,

wherein said liquid medium is combined with reagent means including a conjugate of a labeling substance and a binding component to form a binding reaction system having a bound-species and a free-species of said conjugate; and

wherein the amount of ligand present in said liquid medium is determined as a function of the amount of labeling substance present in said bound-species or said free-species;

the improvement which comprises employing as said labeling substance a reversibly binding enzyme inhibitor, the binding constant for association of said inhibitor and an enzyme whose activity is inhibited thereby being less than about 10^{11} molar^{-1}; adding said enzyme whose activity is affected by said enzyme inhibitor to said bound-species or said free-species; and determining the amount of said enzyme inhibitor therein by measuring the resulting activity of said enzyme.

4,134,793

CREATININE DESIMIDASE IN THE QUANTITATIVE DETERMINATION OF CREATININE

Osamu Terada, and Takayuki Uwajima, both of Machida, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Division of Ser. No. 711,207, Aug. 3, 1976, Pat. No. 4,087,329. This application Oct. 17, 1977, Ser. No. 842,979
Claims priority, application Japan, Aug. 28, 1975, 50-103473; Sep. 11, 1975, 50-109452
Int. Cl.[2] G01N *31/14*
U.S. Cl. 195—103.5 R **7 Claims**

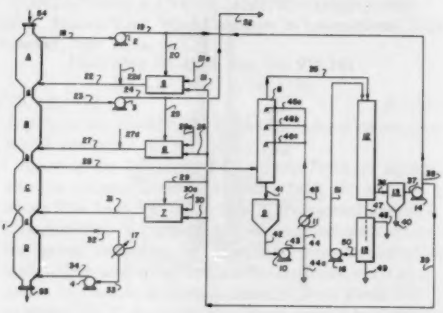
1. A method for the quantitative determination of creatinine in a sample which comprises reacting said sample with a solution of creatinine desimidase until said creatinine is hydrolyzed to form ammonia and N-methyl-hydantoin and then measuring the amount of at least one of said ammonia and N-methyl-hydantoin formed by said reaction.

4,134,794

METHOD FOR PRODUCING NON-ABRASIVE COKE FORMS FROM BROWN-COAL BRIQUETS

Kurt Lorenz, Hattingen; Horst Dungs, Herne, and Peter Speich, Cologne, all of Fed. Rep. of Germany, assignors to Firma Carl Still and Rheinische Braunkohlenwerke Aktiengesellschaft, both of, Fed. Rep. of Germany

Continuation of Ser. No. 660,153, Feb. 23, 1976, abandoned. This application Sep. 28, 1977, Ser. No. 837,448
Int. Cl.[2] C10B *17/00, 21/02, 21/12, 53/08*
U.S. Cl. 201—27 **9 Claims**



1. In a method of producing non-abrasive coke forms of brown-coal briquettes made without a binder from coal having low coking properties in at least three stages in which the brown-coal briquettes, are sequentially, preheated, dehydrated or dried, carbonized and subsequently cooled in recirculating gas circuits in which there is recirculated gas composed substantially of burnt lean gas obtained from said carbonization of the brown-coal briquettes, with the gas recirculated in the circuits of the preheating, dehydrating or drying, and carbonizing stages being heated and the gas recirculated in the circuit of the cooling stage being cooled, the improvement comprising providing, for each of the preheating stage and the dehydrating or drying stage and the carbonization stage, a respective primary gas recirculation circuit which is separate from each other primary gas recirculating circuit and closed except for a respective connection to a source of said lean gas; and separately heating the gas in each of said respective primary gas recirculation circuits of the preheating stage and the dehydrating or drying stage and the carbonization stage.

4,134,795

ACETYLENES REMOVAL FROM DIOLEFIN STREAMS BY EXTRACTIVE DISTILLATION

Colin S. Howat, III, Prairie Village, Kans., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 5, 1978, Ser. No. 893,543
Int. Cl.[2] C07C *7/08;* **B01D** *3/40*
U.S. Cl. 203—53 **6 Claims**

1. A process for the separation of a conjugated diolefin from a C_4- or C_5- hydrocarbon mixture containing said diolefin and acetylenic hydrocarbons which comprises the steps of:

(A) extractively distilling a hydrocarbon feed in a first extractive distillation column:

(1) in the presence of a solvent selected from the group consisting of acetonitrile (ACN), dimethyl formamide (DMF), furfural, acetone, dimethylacetamide and N-methyl-2-pyrrolidone;

(2) which solvent contains about 0 to about 12 weight percent water; and

(3) withdrawing from the top of said first extractive distil-

lation column a raffinate comprised of olefinic and paraffinic compounds;

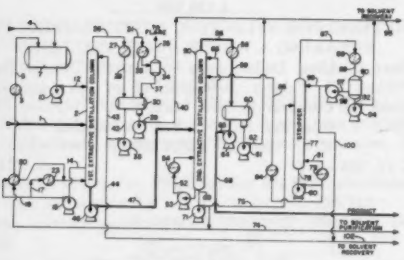
(B) extractively distilling the bottoms stream from step (A) in a second extractive distillation column:

(1) in the presence of a solvent selected from the group consisting of ACN, DMF, furfural, acetone, dimethylacetamide, and N-methyl-2-pyrrolidone:

(a) which solvent contains about 0 to about 12 weight percent water, and

(b) which solvent is substantially free of acetylenic hydrocarbons; and

(2) withdrawing from this second extractive distillation column a distillate which contains the conjugated diolefin and substantially lower concentrations of acetylenic



hydrocarbons with respect to the conjugated diolefin than did the hydrocarbon feed of step (A):

(C) dividing the bottoms stream from the second extractive distillation of step (B) into three streams:

(1) the first of which is recycled to step (A),

(2) the second of which flows to a solvent purification system, and

(3) the third of which flows to a stripper;

(D) stripping the stream of step (C) (3) in a stripping column and thereby stripping out most of the acetylenic hydrocarbons which are removed in the stripping column distillate; and

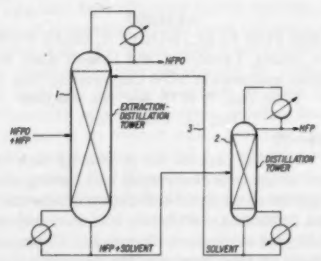
(E) recycling the stripping column bottoms stream from step (D) to step (B) in which said bottoms stream is the extracting solvent.

4,134,796

METHOD OF PURIFYING HEXAFLUOROPROPYLENE OXIDE

Yoshio Oda; Keiichi Uchida, and Shinsuke Morikawa, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Nov. 17, 1977, Ser. No. 852,497
Int. Cl.[2] B01D *3/40;* **C07D** *301/32*
U.S. Cl. 203—63 **5 Claims**



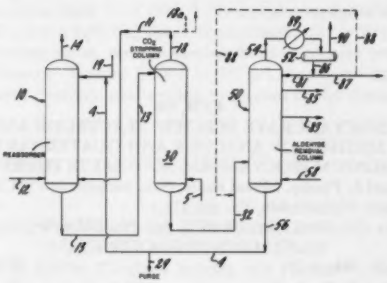
1. A method of purifying hexafluoropropylene oxide which comprises separating hexafluoropropylene oxide from hexafluoropropylene by an extractive distillation in the presence of a normally liquid compound selected from the group consisting of chlorinated hydrocarbons having 2 or more carbon atoms and dialkyl ethers wherein at least one alkyl group is branched and has 3 or more carbon atoms, and recovering purified hexafluoropropylene oxide as the distillate.

4,134,797

PROCESS FOR RECOVERY OF ETHYLENE OXIDE CONTAINING LOW LEVELS OF ALDEHYDIC IMPURITIES

Brian J. Ozero, New York, N.Y., assignor to Halcon Research & Development Corporation, New York, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,544
Int. Cl.[2] B01D *3/00, 1/14;* **C07D** *301/32*
U.S. Cl. 203—75 **31 Claims**



1. A process for treating impure aqueous ethylene oxide solutions containing as impurity at least one aldehyde selected from the group consisting of formaldehyde and acetaldehyde to provide ethylene oxide substantially free of said aldehydic impurities and water is provided which comprises

(a) passing said impure solution as a feed stream to a multistage countercurrent distillation zone having disposed therewithin in ascending order above said feed stream the following fractionation regions:

(1) a first fractionation region of at least 1 theoretical vapor-liquid contacting stage;

(2) a second fractionation region of at least 1 theoretical vapor-liquid contacting stage;

(3) a third fractionation region of at least 5 theoretical vapor-liquid contacting stages; and

(4) a fourth fractionation region of at least 1 theoretical vapor-liquid contacting stage; said multi-stage, countercurrent distillation zone having disposed therewithin below said feed stream a fifth fractionation region of at least 1 theoretical vapor-liquid contacting stage; each of said fractionation regions having means for providing countercurrent contact between downflowing liquid and upwardly flowing vapor;

(b) introducing stripping vapor to said distillation zone below said fifth fractionation region;

(c) withdrawing from the distillation zone as a first side stream at least a portion of the liquid downflowing from said third fractionation region, said first side stream comprising an acetaldehyde-rich ethylene oxide stream;

(d) withdrawing from the distillation zone as a second side stream at least a portion of the liquid downflowing from said fourth fractionation region, said second side stream comprising ethylene oxide substantially free of aldehydic impurities and water;

(e) withdrawing formaldehyde-containing vapor from said distillation zone above said fourth fractionation region, condensing at least a portion of said withdrawn vapor and recycling at least a portion of the condensate so produced as liquid reflux to the distillation zone above said fourth fractionation region; said condensate being recycled as reflux to said distillation zone in an amount sufficient to

provide an internal liquid reflux ratio of at least about 1.35:1, as defined by the expression

$$R = L/P+F$$

wherein R is the internal liquid reflux ratio, L is the moles per hour of liquid downflowing to the third fractionation region from the fourth fractionation region, P is the moles per hour of liquid withdrawn as said second side stream and F is the moles per hour of said withdrawn vapor not so recycled as condensate to the distillation zone; the portion of said condensate not so recycled being withdrawn as a formaldehyde-rich, ethylene oxide stream; and

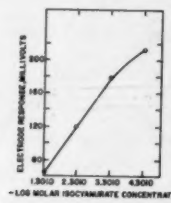
(f) withdrawing from the distillation zone a liquid bottoms product comprising an aqueous solution substantially free of ethylene oxide.

4,134,798

ISOCYANURATE SPECIFIC ELECTRODE AND METHOD OF ANALYSIS AND QUATERNARY AMMONIUM ISOCYANURIC ACID SALTS THEREFORE

Michael L. Pinsky, Mount Holly, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Mar. 13, 1978, Ser. No. 885,499
Int. Cl.[2] G01N *27/56*; C07D *251/32*
U.S. Cl. 204—1 T **13 Claims**



1. An electrode specific for the isocyanurate ion and capable of determining isocyanurate ion activity in solutions comprising:

(a) a platinum conductor covered with a plasticized polyvinyl chloride composition containing a quaternary ammonium isocyanurate salt;

(b) means for electrically connecting the platinum conductor to a pH meter, and

(c) means for insulating said platinum conductor from said solution.

7. An electrochemical method of analyzing an aqueous solution for isocyanurate ion which comprises:

(a) immersing a reference electrode and a platinum electrode covered with a plasticized polyvinyl chloride resin containing a quaternary ammonium isocyanurate salt in a series of aqueous solutions containing known molar concentrations of isocyanurate ions;

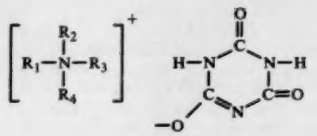
(b) measuring the difference in potential between the reference electrode and covered platinum electrode when immersed in each of said solutions;

(c) preparing a calibration curve by plotting a function of the molar isocyanurate concentration of each solution against the differential potential developed in that solution;

(d) immersing said reference electrode and said platinum electrode in an unknown aqueous solution to be analyzed for isocyanurate activity and measuring the differential voltage developed; and

(e) determining from the measured differential voltage and the calibration curve the concentration of isocyanurate ion in said unknown aqueous solution.

11. A quaternary isocyanuric acid salt having the formula:



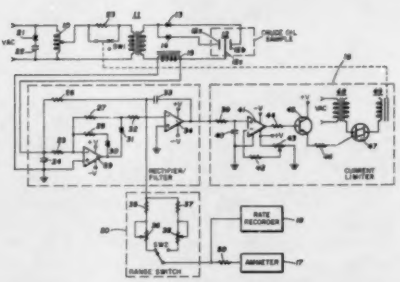
wherein R_1, R_2, R_3 and R_4, are alkyl radicals of 1 to 18 carbon atoms and the total number of carbon atoms in all of the alkyl radicals is such that the quaternary ammonium salt is soluble in decanol.

4,134,799

METHOD FOR SELECTING A DEMULSIFIER FOR BREAKING A WATER-IN-OIL EMULSION

Wallace B. Allen, Dallas; John W. Harrell, Duncanville, and William W. Webster, Arlington, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 18, 1977, Ser. No. 816,562
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—1 T **5 Claims**



1. A method for selecting a demulsifier for breaking an emulsion into its constituent phases, comprising the steps of:

(a) immersing at least two electrodes in a sample of the emulsion,

(b) applying a sufficient AC voltage to said electrodes to cause breakdown of said emulsion,

(c) recording the rate of change of the current flow between said electrodes as the current decreases to zero,

(d) adding a demulsifier to a sample of the emulsion and repeating steps (a) through (c),

(e) repeating step (d) for a plurality of demulsifiers, and

(f) monitoring the recordings of said current flow to identify the demulsifier which provides for the most rapid rate of change of said current flow under the application of said voltage.

4,134,800

PROCESS FOR ELECTROLYTIC IRON POWDER

Prasanna K. Samal, Lyndhurst, and Erhard Klar, Beachwood, both of Ohio, assignors to SCM Corporation, New York, N.Y.

Filed Dec. 7, 1977, Ser. No. 858,090
Int. Cl.[2] C25C *5/02*
U.S. Cl. 204—10 **3 Claims**

1. In an improved process for producing electrolytic iron powder from an aqueous electrolytic bath having an anode and a cathode and an electrolytic cell disposed between the anode and cathode, depositing electrolytic iron onto said cathode at a current density between about 10 amps and 30 amps per square foot of cathode surface, removing the deposited iron from the cathode as iron chips, and pulverizing the iron chips into powder to provide a preponderance of iron powder particles less than −325 mesh (44 microns), the improvement in the electrolytic process comprising:

providing an aqueous electrolytic bath containing ferrous

sulfate at a ferrous ion concentration between about 36 grams and 40 grams of ferrous ion per liter and ammonium sulfate measured as ammonium ion (NH_3) concentration of between about 24 and 28 grams per liter;

maintaining the pH of said electrolytic bath between about 5.6 and 6.0 and the temperature of said electrolytic bath between about 100° F. and 120° F. (38° C. to 49° C. while electrodepositing iron onto said cathode to provide brittle, friable iron deposits on said cathode; and

pulverizing said chips produced from the iron deposits to produce iron powder particles wherein said iron deposits are pulverized to a powder at least 50% by weight of particles less than −325 mesh (44 microns).

4,134,801

TERMINAL CONNECTIONS ON MICROCIRCUIT CHIPS

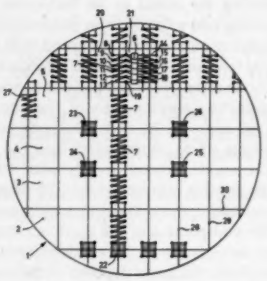
Franz Hofer, and Gustaaf H. A. van der Hoorn, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 795,729, May 11, 1977, abandoned. This application Apr. 12, 1978, Ser. No. 895,711

Claims priority, application Netherlands, May 17, 1976, 7605233

Int. Cl.² C25D *5/02, 5/48*

U.S. Cl. 204—15 **4 Claims**



1. A method of manufacturing an elementary magnetic bubble slice which has a bubble handling structure and a system of conductor tracks extending therefrom to at least one edge of the slice and which is provided near said at least one edge with a number of terminal connections for connection to external circuitry, which comprises providing a non-magnetic substrate on which an anisotropic magnetic layer in which magnetic bubble domains can be maintained is grown, providing a layer of electrically conductive, magnetizable material on top of the magnetic layer, forming bubble handling structures for a number of elementary bubble slices adjoining each other along severing lines of a major slice from the magnetizable, electrically conductive layer simultaneously with conductor tracks and lands, by etching in which on each elementary bubble slice on both sides of at least one severing line a number of connection points are formed which are series-connected in an alternating pattern by means of a conductive strip which crosses said severing line between two successive connection point on the same elementary slice at least twice and is free from intersections, at least one of the connection points being connectable to a voltage source, masking the said layer by means of an insulating layer which exposes the lands, growing metallic bumps electrolytically on the lands and then severing the major slice into a number of elementary bubble slices along said severing lines so as to interrupt the electrical connections between the lands.

4,134,802

ELECTROLYTE AND METHOD FOR ELECTRODEPOSITING BRIGHT METAL DEPOSITS

Roy W. Herr, Troy, Mich., assignor to Oxy Metal Industries Corporation, Warren, Mich.

Filed Oct. 3, 1977, Ser. No. 839,081

Int. Cl.² C25D *3/12, 3/22, 3/38, 3/56*

U.S. Cl. 204—43 T **7 Claims**

1. An aqueous bath for the electrodeposition of bright zinc, copper, nickel-iron, and other metallic materials upon a substrate, which comprises a source of zinc, copper, nickel and iron ions or other metallic ions, and a sulfamalkylated polyamine for improving the brightness, ductility and leveling properties of the metallic electrodeposit.

6. An aqueous bath for the electrodeposition of bright nickel-iron upon a substrate, which comprises a source of nickel and iron ions, about 10 to 100 g/l of a complexing agent, about 30 to 60 g/l of a buffering agent, approximately 0.5 to 10 g/l of a brightening agent, and a sulfamalkylated polyamine present in an amount of about 0.0001 to 1.0 g/l for improving the brightness, ductility and leveling properties of the electrodeposit.

4,134,803

NITROGEN AND SULFUR COMPOSITIONS AND ACID COPPER PLATING BATHS

William E. Eckles, Cleveland Heights, and Thomas W. Starinshak, Berea, both of Ohio, assignors to R. O. Hull & Company, Inc., Cleveland, Ohio

Filed Dec. 21, 1977, Ser. No. 862,940

Int. Cl.² C07C *153/00, 155/00;* **C25D** *3/38*

U.S. Cl. 204—52 R **40 Claims**

1. A nitrogen and sulfur composition prepared by reacting a mixture of

(a) a disulfide having the formula

$$[RR'NCS_2]_2 \qquad \text{(Formula I)}$$

wherein R and R′ are each independently hydrogen, alkyl or aryl groups,

(b) a halo hydroxy sulfonic acid having the formula

$$X(CH_2)_nCHOH—CH_2SO_3M \qquad \text{(Formula II)}$$

wherein X is a halogen, n is one or two and M is hydrogen or an alkali metal, and

(c) an aliphatic aldehyde having up to three carbon atoms, in

(d) an aqueous alkaline medium.

25. An aqueous acidic copper electroplating bath containing one or more bath-soluble copper salts, free acid, chloride ions and an effective amount of one or more bath-soluble organic brightener compounds prepared by reacting a mixture of

(a) a disulfide having the formula

$$[RR'NCS_2]_2 \qquad \text{(Formula I)}$$

wherein R and R′ are each independently hydrogen, alkyl or aryl groups,

(b) a halo hydroxy sulfonic acid having the formula

$$X(CH_2)_nCHOH—CH_2SO_3M \qquad \text{(Formula II)}$$

wherein X is a halogen, n is one or two and M is hydrogen or an alkali metal, and

(c) an aliphatic aldehyde containing up to three carbon atoms, in

(d) an aqueous alkaline medium.

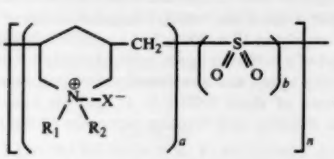
4,134,804

CYANIDE-FREE ZINC PLATING BATH AND PROCESS

Joseph A. Zehnder, Orange, and Terry K. Stevens, Milford, both of Conn., assignors to Enthone, Incorporated, West Haven, Conn.

Filed Aug. 29, 1977, Ser. No. 828,840
Int. Cl.[2] C25D *3/22*
U.S. Cl. 204—55 R **22 Claims**

1. An improved zinc plating process which comprises adding a water-soluble, polyamine sulfone compound and a quaternary pyridine compound to an aqueous cyanide-free zinc plating bath of an alkali-zincate type and subjecting the resulting bath to electro-deposition conditions, said polyamine sulfone compounds having the formula



wherein

each of R_1 and R_2 is a member selected from the group consisting of hydrogen, an allyl group, straight-chain and branched-chain alkyl groups each having 1 to 16 carbon atoms, an aralkyl group, and hydroxyalkyl groups of the general formula $HO-(CH_2)m$, where m is an integer of 1 to 6;

X^- is a member selected from the group consisting of halogen ion, HSO_4^-, HSO_3^-, $HCOO^-$, and CH_3COO^-;

"n" is an integer such that the number average molecular weight becomes 2,000 to 350,000; and

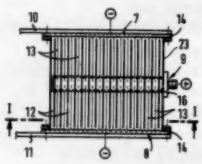
"a" and "b" are natural numbers having a relation such that *a:b* = 100:(10 to 100).

4,134,805

PROCESS FOR ELECTROLYSIS

Hanns Fröhler, Munich, and Erwin Rossberger, Berg, both of Germany, assignors to Dipl.-ing. Hanns Frohler KG, Pullach, Germany

Filed Sep. 6, 1977, Ser. No. 830,967
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1976, 2645121
Int. Cl.[2] C25B *1/25, 1/00, 1/24, 9/00*
U.S. Cl. 204—82 **18 Claims**



1. An electrolysis cell having a housing with an inlet and an outlet for a through-flowing electrolyte and at least three monopolar electrode packs each comprising plates fastened on a common carrier in parallel array wherein the plates of one polarity extend into the gaps formed between the plates of the other polarity and wherein at least one electrode pack of one polarity is disposed between two electrode packs of the other polarity.

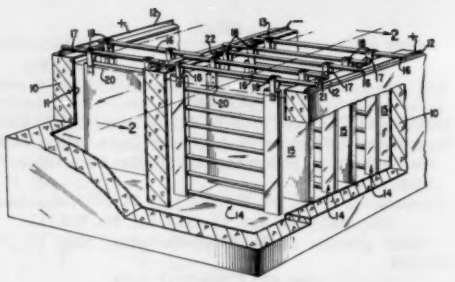
18. The use of the electrolysis cell as claimed in claim **1** for electrolysis installations formed of a plurality of series-connected cells through which the electrolyte flows in parallel, for the production of alkali chlorates, alkali persulfates and alkali superphosphates.

4,134,806

METAL ANODES WITH REDUCED ANODIC SURFACE AND HIGH CURRENT DENSITY AND THEIR USE IN ELECTROWINNING PROCESSES WITH LOW CATHODIC CURRENT DENSITY

Oronzio De Nora, and Carlo Traini, both of Milan, Italy, assignors to Diamond Shamrock Technologies, S.A., Geneva, Switzerland

Continuation of Ser. No. 436,727, Jan. 25, 1974, abandoned, and Ser. No. 677,179, Apr. 15, 1976, abandoned. This application Sep. 15, 1977, Ser. No. 833,661
Claims priority, application Italy, Jan. 29, 1973, 19738 A/73
Int. Cl.[2] C25C *1/22, 7/02*
U.S. Cl. 204—105 R **33 Claims**



1. The method of recovering metal from an aqueous acid solution containing the metal to be recovered, which comprises electrolyzing said solution in an electrolytic cell between an insoluble metal anode formed of spaced rods having a non-corrodible metal base and conducting electrocatalytic surfaces, and a solid cathode onto which the metal is deposited, in which the active conducting surface area of the anode facing the cathode with reference to the active cathode conducting surface area is at least 1.5 to 20 times less than the active area of the cathode, the anode current density with reference to the cathode current density is at least 1.5 to 20 times greater than the cathode current density and the anode rods are spaced uniformly in the mid-portion of the anode structure and closer together at the extremities of the anode structure to produce substantially uniform thickness deposits of the metal to be won over the entire active surface of the cathode.

4,134,807

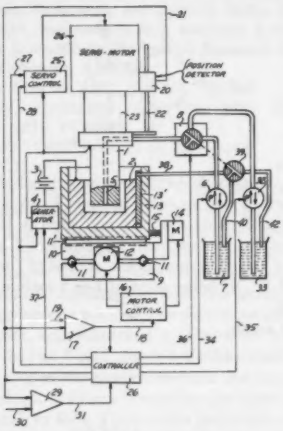
PROCESS AND APPARATUS FOR ELECTRICAL MACHINING OF AN ELECTRODE WORKPIECE BY AN ELECTRODE TOOL, USING EDM AND ECM

Jean-Paul Briffod, Monnetier-Mornex, France, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Dec. 20, 1977, Ser. No. 862,448
Claims priority, application Switzerland, Dec. 22, 1976, 16224/76
Int. Cl.[2] B23P *1/00, 1/04, 1/08, 1/14*
U.S. Cl. 204—129.1 **8 Claims**

1. A method for electrically machining an electrode workpiece by means of an electrode tool wherein electrical discharges are applied between the electrodes through a dielectric fluid in the course of a first machining step, and wherein in the course of a second machining step said dielectric fluid is at least partially replaced by an electrolyte solution through which an electrical current of predetermined value is circulated between said electrodes, said method comprising displacing said electrodes relative to each other during said first machining step according to a translation motion effected in a plane perpendicular to the direction of relative feed of said electrodes up to a predetermined amount of eccentricity, and effecting said second machining step by means of the same electrode tool as used in said first machining step after decreasing at least partially said amount of eccentricity and after

having retracted said electrode tool relative to said electrode workpiece, said second machining step being effected along



the axis of said feed for a distance substantially equal to the decrease of amplitude of said eccentricity.

4,134,808

METHOD OF TRIMMING ELECTRONIC COMPONENTS HAVING AN INTEGRATED CIRCUIT TO DESIGN SPECIFICATION

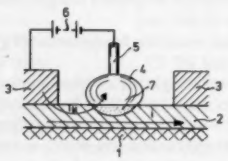
Günter Krüger, Leonberg; Klaus Küttner, Stuttgart; Manfred Widmaier, Leonberg, and Erich Leinauer, Besigheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jan. 18, 1978, Ser. No. 870,470

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702207

Int. Cl.[2] **C25F** *3/02, 5/00;* **C25D** *21/12*

U.S. Cl. 204—129.2 **6 Claims**



1. A method of trimming to specification electrical components containing thin film circuits having a circuit element determining electrical characteristics of the perspective components, which method comprises the steps of:

passing an auxiliary current through a thin film path of said thin film circuits of an electrical apparatus component to produce chemical change of the conductivity of said thin film path while at the same time the component is energized as for typical operating conditions, in such a way that the voltage drop produced by the auxiliary current (i_H) in said thin film path influences an electrical characteristic to be adjusted by the trimming process, at the end of said process, only within a predetermined range, and

measuring the said characteristic to be adjusted while said auxiliary current flows through said path in order to determine when the flow of said auxiliary current should be stopped.

4,134,809

RADIATION CURABLE CELLULOSE ESTER-ACRYLATE COMPOSITIONS

James G. Pacifici, and Gordon C. Newland, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 22, 1977, Ser. No. 826,615

Int. Cl.[2] **C08L** *1/00, 3/00*

U.S. Cl. 204—159.12 **10 Claims**

1. A radiation curable cellulose composition comprising a mixture of components A, B and C as follows:

A. from 10 to 75 weight percent of a carboxylated cellulose ester;

B. from 90 to about 25 weight percent of glycidyl acrylate or glycidyl methacrylate or combination thereof, said weight percent being based on the total weight of components A and B; and

C. an effective amount of a photoinitiator.

4,134,810

PROCESS FOR PREPARING A HEAT-CURABLE POLYMER EMULSION USING HIGH ENERGY RADIATION

Kunio Araki, Takasaki; Keizo Makuuchi, Sakai, and Tohru Takagi, Hiratsuka, all of Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed Apr. 6, 1977, Ser. No. 785,091

Claims priority, application Japan, Apr. 8, 1976, 51-39601; Apr. 19, 1976, 51-44724

Int. Cl.[2] **C08F** *8/00, 2/46, 4/00*

U.S. Cl. 204—159.15 **6 Claims**

1. A process for preparing a heat-curable polymer emulsion which in cured condition has improved water resistance, chemical resistance and toughness, comprising

adding 0.01 to 20% by weight of a lipophilic polyfunctional monomer to a thermosettable polymer emulsion, and irradiating with an ionizing radiation with the total dose of irradiation being 0.1 M rad to 50 M rad;

wherein the thermosettable polymer emulsion comprises at least one homopolymer of a monomer having one or more functional groups selected from the group consisting of epoxide, amino, anhydro, carboxyl, carboxyl, hydroxyl and methylol, or a copolymer of two of said monomers, or a copolymer of a said monomer with another polymerizable vinyl monomer as disperse phase with the proviso that said functional groups be present such to provide a thermosettable polymer emulsion; and

wherein the lipophilic polyfunctional monomer has low solubility in water at room temperature, good compatibility with the thermosettable polymer emulsion and at least two reactive carbon-to-carbon double or triple bonds.

4,134,811

HALOGENATED PHOTOPOLYMERIZABLE COMPOSITIONS

Michel De Poortere, Brussels; Marc Colpaert, Ghent; Paul Dufour, Ruisbroek, and August Vrancken, Dworp, all of Belgium, assignors to UCB, Societe Anonyme, Belgium

Filed May 3, 1976, Ser. No. 682,630

Claims priority, application United Kingdom, May 12, 1975, 19786/75

Int. Cl.[2] **C08F** *2/50, 4/00*

U.S. Cl. 204—159.15 **24 Claims**

1. A film-forming halogenated photopolymerizable composition, which comprises:

(a) 20 to 70% by weight of at least one halogenated polymer, which (1) has a chain interrupted by at least one oxygen or nitrogen atom, (2) contains from 4 to 70% by weight halogen atoms attached to carbon atoms having the electronic configuration sp^2, (3) has an average molecular weight between about 700 and about 10,000, (4) has a glass

transition temperature (Tg) between about 20° C. and the thermal decomposition point of the polymer;

(b) 20 to 60% by weight of at least one monomeric organic compound containing at least two acrylic acid and/or methacrylic acid radicals and containing from 0 to about 65% by weight halogen atoms attached to carbon atoms having the electronic configuration sp^2;

(c) 0 to about 40% by weight of at least one monomeric organic compound containing an acrylic acid or methacrylic acid radical and containing from 0 to about 65% by weight halogen atoms attached to carbon atoms having the electronic configuration sp^2;

(d) about 1 to about 25% by weight of a photoinitiator system comprising

(1) 0.5 to 100% by weight of at least one aromatic ketone,

(2) 0 to 99.5% by weight of at least one tertiary amine, at least one carbon atom of which, in the alpha position with regard to the nitrogen atom, carries at least one hydrogen atom;

(3) 0 to 90% by weight of an aromatic or non-aromatic alpha-dione,

the sum of (1) + (2) + (3) representing 100% by weight of the photoinitiator system;

and the total content of halogen atoms attached to carbon atoms having the electronic configuration sp^2 representing about 3 to about 50% by weight of the total halogenated photopolymerizable composition.

4,134,812

METHOD OF MANUFACTURING SHAPED ARTICLES OF CROSS-LINKED POLY-α-OLEFIN COMPOSITION BY IRRADIATION OF ELECTRON BEAM

Takashi Sasaki, Takasaki; Kunio Araki, Mito; Miyuki Hagiwara, Maebashi; Hayao Ishitani, Hiratsuka; Eisuke Saito, Kamakura, and Kyoji Komatsu, Yokosuka, all of Japan, assignors to The Furukawa Electric Co., Ltd. and Japan Atomic Energy Research Institute, both of Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,569

Claims priority, application Japan, Dec. 28, 1976, 52-157749

Int. Cl.² C08F *8/00*

U.S. Cl. 264—25 **8 Claims**

1. A method of manufacturing shaped articles of cross-linked poly-α-olefin composition by irradiation of electron beam which comprises the steps of blending the poly-α-olefin with a compound which is miscible with the poly-α-olefin and is expressed by the general formula:

X—Ym

where X is a group free from acetylenic linkage, Y is a group containing acetylenic linkage, and m is an integer of 1 or over, and tetrakis-[methylene-(3,5-di-t-butyl-4-hydroxy-hydrocinnamate)]-methane; molding the blended mass into a desired shape; and irradiating electron beam on said shaped articles.

4,134,813

PHOTOPOLYMERIZABLE COMPOSITION AND ITS USE

Werner Kuesters; Rolf Osterloh, both of Ludwigshafen, and Manfred Jacobi, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Rheinland, Pfalz, Fed. Rep. of Germany

Filed Dec. 8, 1977, Ser. No. 858,744

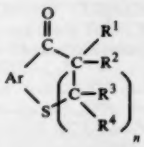
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658935

Int. Cl.² C08F *2/46, 4/00, 8/18*

U.S. Cl. 204—159.24 **10 Claims**

1. A photopolymerizable composition which contains at least one olefinically unsaturated compound and from 0.2 to 20 percent by weight (based on the unsaturated compound) of a photoinitiator, with or without conventional additives, wherein the photoinitiator is a mixture of

(A) at least one aromatic carbonyl compound of the general formula (A)



(A)

where Ar is an ortho-arylene radical which may or may not be substituted by one or more radicals R^1 to R^4, R^1, R^2, R^3 and R^4 are identical or different and each is H, alkyl of 1 to 5 carbon atoms, phenyl, halogen, alkoxy of 1 to 5 carbon atoms, alkaryl of 7 to 11 carbon atoms, aralkyl of 7 to 11 carbon atoms or $—CO_2R^9$, R^9 being alkyl of 1 to 5 carbon atoms, and n is 0 or 1, and

(B) an amine.

4,134,814

HALOGENATED PHOTOPOLYMERIZABLE ADHESIVES

Michel De Poortere, Brussels; Marc Colpaert, Ghent; Paul Dufour, Ruisbroek, and August Vrancken, Dworp, all of Belgium, assignors to UCB, Societe Anonyme, Belgium

Filed May 3, 1976, Ser. No. 682,629

Claims priority, application United Kingdom, May 12, 1975, 19787/75

Int. Cl.² C08F *2/50, 4/00*

U.S. Cl. 204—159.15 **21 Claims**

1. A halogenated photopolymerizable adhesive, which comprises:

(a) 20 to 70% by weight of at least one halogenated polymer, which:

(1) has a chain interrupted by at least one oxygen or nitrogen atom,

(2) contains from 4 to 70% by weight of halogen atoms attached to carbon atoms having the electronic configuration sp^2,

(3) has an average molecular weight between about 700 and about 10,000 and

(4) has a glass transition temperature (Tg) between about −80° C. and 20° C.;

(b) 5 to 30% by weight of at least one organic monomer compound containing at least two acrylic and/or methacrylic acid radicals and containing from 0 to 65% by weight of halogen atoms attached to carbon atoms having the electronic configuration sp^2;

(c) 20 to 70% by weight of at least one organic monomer compound containing an acrylic or methacrylic acid radical and containing from 0 to about 65% by weight of halogen atoms attached to carbon atoms having the electronic configuration sp^2;

(d) about 1 to about 25% by weight of a photo-initiator system comprising:

(1) 0.5 to 100% by weight of at least one aromatic ketone,

(2) 0 to 99.5% by weight of at least one tertiary amine, at least one carbon atom of which, in the alpha position with regard to the nitrogen atom, carries at least one hydrogen atom,

(3) 0 to 90% by weight of an aromatic or non-aromatic alpha-dione, the sum of (1) + (2) + (3) representing 100% by weight of the photoinitiator system;

the total content of halogen atoms attached to carbon atoms having the electronic configuration sp^2 amounting to from about 3 to about 50% by weight of the total halogenated photopolymerizable adhesive.

4,134,815

AMPHOTERIC COMPOSITE RESINS AND METHOD OF PREPARING SAME BY POLYMERIZATION OF A TWO-PHASE DISPERSION OF MONOMERS

Mervyn B. Jackson, Brunswick, and Brian A. Bolto, Mitcham, both of Australia, assignors to ICI Australia Limited and Commonwealth Scientific and Industrial Research Organization, both of Melbourne, Australia

Filed May 20, 1977, Ser. No. 798,884

Claims priority, application Australia, May 31, 1976, PC/6110; Jul. 16, 1976, PC/6675

Int. Cl.[2] C08F *2/48, 2/18, 2/20, 8/00*

U.S. Cl. 204—159.22 18 Claims

1. A process of manufacturing an amphoteric composite resin which process comprises first polymerizing a dispersion comprising two liquid phases wherein the first liquid phase comprises at least one monomer containing a basic group or a precursor or derivative thereof and a crosslinking agent, and the second liquid phase comprises at least one monomer containing an acidic group or a precursor or derivative thereof and a crosslinking agent, and wherein the monomers are not of opposite charge, the two liquid phases are substantially immiscible and partitioning of the monomers from one liquid phase to the other is minimal, to form a composite one liquid phase to the other is minimal, to form a composite polymeric material; and second treating the composite polymeric material to convert any acidic group precursor or derivative and any basic group precursor or derivative to the free acid and free base respectively to form an amphoteric composite resin.

4,134,816

PROCESS FOR CATIONIC ELECTRODEPOSITION

Joseph F. Bosso, Lower Burrell, and Lance C. Sturni, McKeesport, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 562,086, Mar. 26, 1975, Pat. No. 4,101,486. This application Mar. 7, 1978, Ser. No. 884,333

Int. Cl.[2] C25D *13/00*

U.S. Cl. 204—181 C 12 Claims

1. A method of coating a conductive substrate serving as a cathode which comprises passing electric current between an anode and said cathode in electrical contact with a water-dispersed composition comprising an aqueous dispersion of:

(A) a quaternary ammonium salt group solubilized organic resin containing active hydrogen atoms which is the reaction product of:

(1) a tertiary amine-acid salt, and

(2) a polyepoxide;

(B) a capped organic polyisocyanate stable at room temperature in the presence of said resin (A) and reactive with the active hydrogens of said resin (A) at elevated temperatures, to form a cured product cured through urethane crosslinks.

4,134,817

METHOD OF ATTACKING A THIN FILM BY DECOMPOSITION OF A GAS IN A PLASMA

Bernard Bourdon, Orsay, France, assignor to Aisthom-Atlantique, Paris Cedex, France

Filed Jan. 10, 1978, Ser. No. 868,239

Claims priority, application France, Jan. 11, 1977, 77 00586

Int. Cl.[2] C23C *15/00*

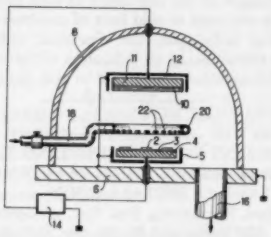
U.S. Cl. 204—192 E 10 Claims

1. A method of etching a thin film by decomposition of a gas in a plasma, said method comprising the following steps:

placing a substrate bearing a film to be etched into a chamber;

introducing a gaseous medium at a pressure lying between 10^{-2} and 10^{-4} torr into said chamber, said medium containing molecules capable of being broken by electron bombardment to give rise to positive ions and negative ions, the positive ions being capable of chemically attacking the material of said film;

applying a high frequency difference of electric potential between an electrically grounded conductive surface and a target conductive surface with said conductive surfaces being situated on either side of said substrate in such a manner as to create a plasma in said chamber in the neighborhood of the substrate;



electrically erasing said substrate relative to said plasma by connecting said substrate to said target through a biasing impedance, and

introducing said gaseous medium into said chamber via a tube in which the pressure is maintained between 0.2 and 4 torr with the tube being pierced by injection ports which face the substrate to cause the gaseous medium in the form of jets to be directed towards the substrate.

4,134,818

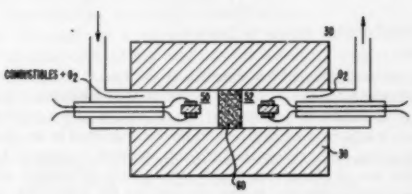
SOLID ELECTROLYTE SENSOR FOR MONITORING COMBUSTIBLES IN AN OXYGEN CONTAINING ENVIRONMENT

Alfred R. Pebler, Penn Hills, and Donald W. Beckett, Wilkinsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 7, 1977, Ser. No. 785,378

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 S 2 Claims



1. A combustible sensor for measuring the concentration of a combustible in an excess oxygen gas environment, comprising a first and a second resistance element, each of said resistance elements being of a material which conducts electrical current at elevated temperatures on the basis of a vacancy mechanism involving doubly charged oxygen ions, said resistance elements having a resistance characteristic which varies exponentially with the inverse of the resistance element temperature, and a pair of electrodes disposed on opposite surfaces of each of said first and second resistance elements, said pair of electrodes associated with said first resistance element being catalytic electrodes,

heater means associated with said first and second resistance elements to maintain said resistance elements at desired operating temperatures, said heater means maintaining said first resistance element at a temperature corresponding to the temperature of combustion of the combustibles constituent of interest, said catalytic electrodes combust-

ing said combustibles constituent and the heat of combustion causing an increase in the temperature of said first resistance element and a corresponding decrease in the resistance of said first resistance element, the surface to volume ratio of said first resistance element being such as to minimize dissipation of heat in said first resistance element, and

an electrical bridge circuit, said first and second resistance elements each forming one leg of said bridge circuit such that changes in the resistance of said first resistance element in response to said heat of combustion produces an electrical imbalance, the electrical imbalance of said bridge circuit being an indication of the concentration of said combustibles constituent in said gas environment.

4,134,819

ARRANGEMENT FOR CONTROLLING THE ELECTRIC ENERGY SUPPLY TO AN ELECTROPLATING INSTALLATION

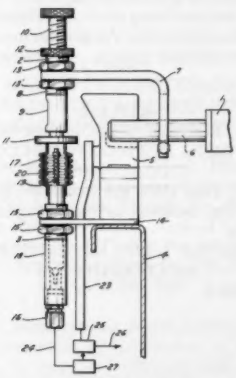
Rudolf Kreisel, Nuremberg, Fed. Rep. of Germany, assignor to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,568

Claims priority, application Fed. Rep. of Germany, Mar. 14, 1977, 2711537

Int. Cl.[2] C25D *17/04*; C25C *7/00*

U.S. Cl. 204—228 **15 Claims**



1. An arrangement for controlling the rate at which a source supplies electric energy into a circuit that includes a carrier which is displaceable into and out of an operative position in which it supports workpieces to be electroplated in an electroplating vat, comprising an actuating member connected to the carrier for displacement therewith and for positional adjustment relative thereto; means on said vat for detecting, in the operative position of the carrier, the extent of positional adjustment of said actuating member and for generating a signal proportionate to the detected extent; and means for transmitting the signal to the source to control the same.

4,134,820

SEPARATION OF PARTICULATE MATERIAL FROM SLUDGE, SLURRIES AND LIKE FLOWABLE MATERIAL

David Ellis, New Brighton, Wales, and John G. Sunderland, Tarvin, England, assignors to The Electricity Council, England

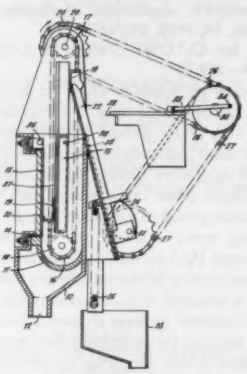
Filed Nov. 17, 1977, Ser. No. 853,017

Claims priority, application United Kingdom, Nov. 17, 1976, 47980/76

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—300 R **19 Claims**

1. Apparatus for removing particulate material from a sludge or like flowable material containing solid particles comprising a container having a fixed position anode with a vertical or substantially vertical surface, a fixed position cathode in said container spaced away from the anode and facing the anode, an endless flexible driven element, at least one scraper mounted on said flexible element to be carried upwardly adjacent that surface of the anode which faces the cathode, the flexible element being arranged to carry the scraper around an endless path for repetitive passage adjacent the anode surface, said scraper extending in a substantially horizontal plane across the



whole width of the anode surface so that material deposited on the anode or at least some of that material is scraped off onto the upper side of the scraper as that scraper moves upwardly, and a movable collector arranged to engage the or each scraper on the endless flexible element as that scraper moves downwardly so as to remove material therefrom and then to move clear of that scraper and return to a position to engage the next scraper.

4,134,821

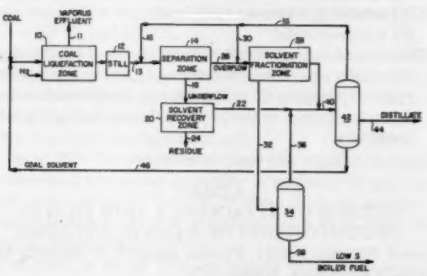
MAINTENANCE OF SOLVENT BALANCE IN COAL LIQUEFACTION PROCESS

Everett Gorin, San Rafael, Calif., assignor to Continental Oil Company, Stamford, Conn.

Filed Jun. 1, 1977, Ser. No. 802,382

Int. Cl.[2] C10G *1/04, 1/08*

U.S. Cl. 208—8 **5 Claims**



1. In a coal liquefaction process wherein (a) a distillable coal solvent is used in a hydroextraction zone to yield a product from which a slurry is recovered that consists essentially of extract and polymerized solvent dissolved in said coal solvent and undissolved solids, and (b) said slurry is separated into a first fraction which is substantially solids-free, and a second fraction which is solids-rich, said first fraction containing extract and polymerized solvent dissolved in coal solvent, the improvement whereby the coal solvent is maintained in balance which comprises:

(1) conducting said first fraction to a solvent fractionation zone, without any intervening distillation;

(2) adding a deasphalting solvent to said solids-free first fraction in said solvent fractionation zone under conditions effective to separate the asphaltene and benzene insoluble content of the extract from the coal solvent, polymerized coal solvent and at least part of the oil content of the extract;
(3) recovering from said solvent fractionation zone the separated coal solvent, polymerized solvent and oil; and
(4) subjecting said separated coal solvent, polymerized solvent and oil, in admixture, to hydrogenation under conditions effective to regenerate coal solvent from the polymerized solvent and to convert the oil to a distillable product containing said coal solvent.

4,134,822

PROCESS FOR MINIMIZING VAPORIZABLE CATALYST REQUIREMENTS FOR COAL HYDROGENATION-LIQUEFACTION

Ralph E. Wood, St. Orem; Wendell H. Wiser, Kaysville; Larry L. Anderson, and Alex G. Oblad, both of Salt Lake City, all of Utah, assignors to University of Utah, Salt Lake City, Utah

Filed Jan. 3, 1977, Ser. No. 756,306
Int. Cl.[2] C10G *1/08*
U.S. Cl. 208—10 **7 Claims**

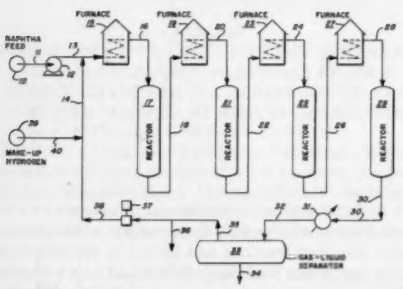
1. In a process for catalytic hydrogenation-liquefaction of dry-fed coal under short-residence reaction environment conditions, an improved catalyzing procedure comprising the steps of:
(a) selecting a catalyst material from a group of compounds comprised of metallic salts having hydrogenating character and having a vapor pressure in the range of 1 mm to 10^3 mm Hg at reaction temperatures, and
(b) applying an amount of dry catalyst less than 5 weight percent based on total weight of coal and catalyst to said coal in sufficient time prior to removal of said coal from the reaction environment to obtain a desired level of reaction.

4,134,823

CATALYST AND HYDROCARBON CONVERSION PROCESS

Ralph J. Bertolacini, Chesterton, Ind., and Dae K. Kim, Naperville, Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 640,005, Dec. 12, 1975, abandoned. This application Jul. 20, 1977, Ser. No. 817,144
Int. Cl.[2] C10G *43/08*
U.S. Cl. 208—65 **25 Claims**



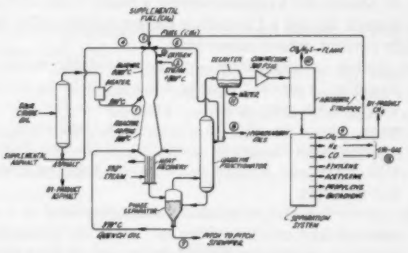
1. A process for the catalytic reforming of a hydrocarbon feed, said feed comprising a hydrocarbon stream boiling in the range of about 70° F. to about 500° F., which process comprises contacting a catalyst consisting of from about 0.1 to about 2 weight percent rhenium and from about 0.1 to about 2 weight percent gallium supported on a solid porous refractory inorganic oxide support, with said hydrocarbon feed and hydrogen, at a pressure of about 50 psig to about 1,000 psig, a weight hourly space velocity of about 0.5 to about 10 weight units of hydrocarbon per hour per weight unit of catalyst, a hydrogen addition rate of about 1,500 to about 15,000 standard cubic feet per barrel of feed and at an average catalyst temperature of about 850° F. to about 1,050° F.

4,134,824

INTEGRATED PROCESS FOR THE PARTIAL OXIDATION-THERMAL CRACKING OF CRUDE OIL FEEDSTOCKS

Gerard R. Kamm, S. Charleston, W. Va., and Kazuo Tanaami, Yokohama, Japan, assignors to Union Carbide Corporation, New York, N.Y.

Filed Jun. 7, 1977, Ser. No. 804,223
Int. Cl.[2] C10G *9/36*
U.S. Cl. 208—92 **5 Claims**



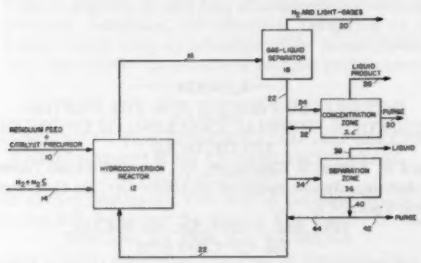
1. An integrated partial oxidation-thermal cracking process of increased yield for the utilization of all fractions of crude oil feedstocks in the concurrent production of synthesis gas and an olefin rich stream comprising the steps of:
(a) separating, by distillation, a crude oil feedstock stream into distillate and asphaltic streams;
(b) burning, at a temperature of about 1800°–2200° C., streams of fluid fuel and oxygen having a weight ratio of about 0.4–0.8 to 1 in the presence of superheated steam to form a reducing stream of hot combustion products;
(c) passing said asphaltic stream as fuel to said burning step (b);
(d) injecting a crude oil distillate fraction stream into said reducing stream of hot combustion products;
(e) passing the resulting injected stream through a velocity accelerating zone to a reaction zone maintained at an exit temperature of about 800°–1000° C. and a pressure of about 10–150 psig for 5–50 milliseconds to effect thermal cracking of said crude oil distillate fraction stream to a stream containing stream and reaction products;
(f) thermally quenching said steam and reaction products stream;
(g) removing pitch from said stream and fractionating the resulting stream to provide at least one stream of hydrocarbon oil and an olefin rich gas stream;
(h) recycling fractions of said hydrocarbon oil as fuel to said burning step (b);
(i) separating carbon dioxide and any contained hydrogen sulfide from said olefin rich gas stream;
(j) separating streams of synthesis gas, methane and ethylene from said olefin rich gas stream; and
(k) recycling said methane stream as fuel to said burning step (b).

4,134,825

HYDROCONVERSION OF HEAVY HYDROCARBONS

Roby Bearden, Jr., and Clyde L. Aldridge, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 702,227, Jul. 2, 1976, abandoned. This application Nov. 2, 1977, Ser. No. 847,898
Int. Cl.[2] C10G *13/06;* B01J *27/04*
U.S. Cl. 208—108 20 Claims



1. A process for hydroconverting a heavy hydrocarbon oil chargestock having a Conradson carbon content of at least 5 weight percent, which comprises:

(a) adding to said chargestock an oil-soluble metal compound in an amount ranging from about 10 to about 950 weight parts per million, calculated as the elemental metal, based on said oil chargestock, said metal being selected from the group consisting of Groups IVB, VB, VIB, VIIB and VIII of the Periodic Table of Elements and mixtures;

(b) converting said oil-soluble metal compound to a solid, non-colloidal catalyst within said oil in the presence of a hydrogen-containing gas by heating said oil to an elevated temperature, said catalyst comprising from about 10 to about 950 weight parts per million of said added metal, calculated as the metal, based on said oil chargestock;

(c) reacting the oil containing said catalyst with hydrogen under hydroconversion conditions, in a hydroconversion zone, to effect at least a 50 percent conversion of said Conradson carbon content of said heavy hydrocarbon oil chargestock, and

(d) recovering a hydroconverted hydrocarbon oil.

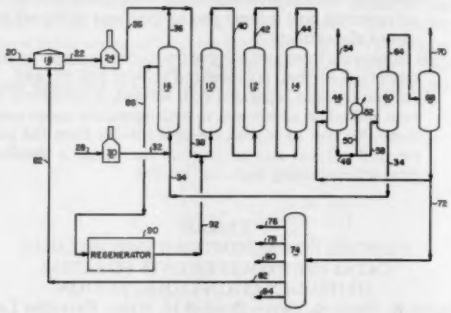
4,134,826

METHOD FOR PRODUCING HYDROCARBON FUELS FROM HEAVY POLYNUCLEAR HYDROCARBONS BY USE OF MOLTEN METAL HALIDE CATALYST

Everett Gorin, San Rafael, Calif., assignor to Continental Oil Company, Stamford, Conn.

Filed Nov. 2, 1977, Ser. No. 847,996
Int. Cl.[2] C10G *11/08;* C01G *9/04*
U.S. Cl. 208—108 4 Claims

1. In a process for hydrocracking heavy carbonaceous feedstocks to produce hydrocarbon fuels by contacting said feedstocks with hydrogen in the presence of a molten metal halide catalyst to produce said hydrocarbon fuels; thereafter separating at least a major portion of said hydrocarbon fuels from the spent molten metal halide catalyst and regenerating said catalyst, the improvement comprising passing said spent molten metal halide catalyst from which said major portion of said hydrocarbon fuels has been removed to a hydrogen contactor



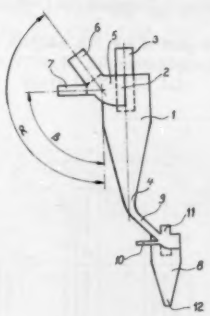
zone and contacting said spent molten metal halide in said hydrogen contactor with hydrogen.

4,134,827

HYDROCYCLONE SEPARATOR

Rune H. Frykhult, Johanneshov, Sweden, assignor to AB Celleco, Stockholm, Sweden

Filed Mar. 24, 1977, Ser. No. 780,918
Claims priority, application Sweden, Mar. 26, 1976, 7603714
Int. Cl.[2] B04C *5/04*
U.S. Cl. 209—211 3 Claims



1. A hydrocyclone separator having at one end an inlet for tangentially introducing into the separator a diluted mixture separable into two fractions and having at the other end an outlet for one of said fractions, wherein said inlet comprises an inlet nozzle connected to a first supply line for a concentrated mixture to be separated into said fractions and a second supply line for a diluting liquid, said first supply line and said second supply line being connected separately to said inlet nozzle, which inlet nozzle directs the flow into the hydrocyclone with one component of movement directed toward said outlet, said second supply line forming a substantially right angle to the principal axis of the hydrocyclone and said first supply line forming an obtuse angle to the principal axis.

4,134,828
SYSTEM AND METHOD FOR THE FRACTIONATION OF SUSPENDED SOLIDS BY MEANS OF HYDROCYCLONES

Helmut F. Trawinski, Hirschau, Oberpfalz, Fed. Rep. of Germany, assignor to Amberger Kaolinwerke GmbH, Hirschau,Oberpfalz, Fed. Rep. of Germany

Filed May 18, 1977, Ser. No. 798,093
Claims priority, application Fed. Rep. of Germany, May 21, 1976, 2622880; Apr. 15, 1977, 2716611
Int. Cl.[2] B04C 5/14
U.S. Cl. 209—211 23 Claims

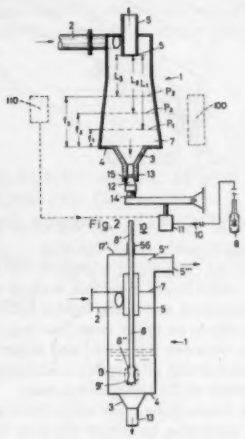


Fig. 2

1. The method of fractionally separating a liquid suspension into a heavier fraction and a lighter fraction comprising introducing a flow of said suspension into a hydrocyclone separator having an upper overflow and a lower adjustable reject nozzle to effect separation of said suspension into heavier and lighter fractions, discharging said lighter fraction through said upper overflow and said heavier fraction through said reject nozzle, controlling the rate of discharge of said heavier fraction through said nozzle relative to the rate of introduction of said suspension into the separator to provide a slurry fill within said separator above said reject nozzle, measuring the level of said slurry fill above said reject nozzle and controlling the height of said slurry fill to establish the separation mesh of said fractions.

4,134,829
METHOD AND APPARATUS FOR THE SEPARATION OF MAGNETIZABLE PARTICLES FROM A FINELY-GRANULAR SOLID SUSPENDED IN A CARRIER MEDIUM BY MEANS OF INTENSE FIELD-MAGNET SEPARATION

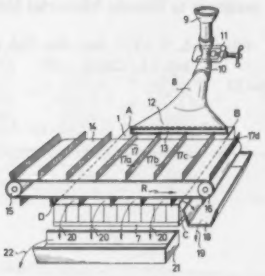
Hans Bender, Leverkusen; Karl-Heinz Unkelbach, Rodenkirchen, and Wolf Zabel, Seelscheid, all of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Germany

Filed Oct. 6, 1976, Ser. No. 730,072
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1975, 2545689
Int. Cl.[2] B03C 1/22
U.S. Cl. 209—223 R 2 Claims

1. Apparatus for the separation of magnetizable particles from fine-grained particles of solids suspended in a carrier medium to form a sludge, comprising:

a magnetic system including a surface and a plurality of supra-conducting magnets providing alternate north and south poles longitudinally and transversely of said surface, said supra-conducting magnets each having one end adjacent said surface and short circuited opposite ends to amplify the magnctic force in the direction of said surface, said surface disposed at an angle to the horizontal, said magnets including coils energized to provide magnetic forces which increase from one end of said surface toward the other end of said surface;

charging means for creating a laminar flow of the sludge over said surface from said one end toward the other end so that magnetic particles having a greater susceptibility adhere to said surface nearer said one end and magnetic particles with lesser susceptibilities adhering to said surface at respective distances from said one end toward said other end; and

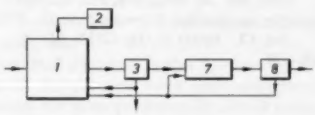


removal means for mechanically removing the adherent particles from said surface, said removal means including a plurality of scrapers spaced apart in the direction of sludge flow and movable over said surface transversely of the direction of sludge flow to scrape respective particles of different magnetic susceptibility from said surface, respectively.

4,134,830
METHOD OF PURIFYING WASTE WATER

Harald Skogman, Skanör, and Lennart Huss, Malmo, both of Sweden, assignors to Svenska Sockerfabriks AB, Malmo, Sweden

Continuation of Ser. No. 677,551, Apr. 16, 1976, abandoned.
This application Aug. 18, 1977, Ser. No. 825,852
Claims priority, application Sweden, Apr. 25, 1975, 7504850
Int. Cl.[2] C02C 1/14
U.S. Cl. 210—5 7 Claims



1. A method of biologically purifying waste water rich in carbohydrates or proteins comprising:

(a) subjecting the waste water to an anaerobic fermentation state wherein the waste water is biologically treated with methane producing organisms under anaerobic conditions wherein substantial portions of methane gas are generated and a first sludge-bearing water is produced;

(b) collecting said generated methane gas;

(c) leading off said generated methane gas;

(d) subjecting said first sludge-bearing water to sludge separation to form a first sludge concentrate and a first aqueous effluent;

(e) returning said first sludge concentrate to the anaerobic fermentation state;

(f) subjecting said first aqueous effluent to an aerobic fermentation stage to form a second sludge-bearing water;

(g) subjecting said second sludge-bearing water to sludge separation to form a second sludge concentrate;

(h) returning a fraction of said second sludge concentrate to

the aerobic fermentation stage, returning the remainder of said second sludge concentrate to the anarerobic fermentation stage; and

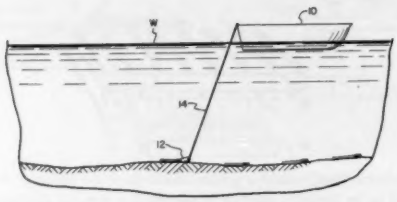
(i) discharging said first sludge concentrate for disposal.

4,134,831

METHOD FOR LAKE RESTORATION

Gaynor W. Dawson, Richland, and Basil W. Mercer, Pasco, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Filed Feb. 7, 1977, Ser. No. 766,535
Int. Cl.² C02B 1/16
U.S. Cl. 210—33 **19 Claims**



1. A method of removing a target substance from naturally occurring sediments in an aqueous environment in situ comprising the steps of:

dispersing collection units having a density greater than water in said sediments without substantial agitation of said sediments, each of said units comprising a medium having an affinity for said target substance, whereby said target substance will be bound to said units, and a magnetically susceptible substance;

collecting said units without substantial agitation of said sediments by attracting said units to a magnetic collection device while in said aqueous environment; and

removing said collection device and the collected units attracted thereto from said aqueous environment.

4,134,832

METHOD AND DEVICE FOR TREATMENT OF BLOOD

Ken Heimreid, Brånanveien 44B, 3940 Heistad, Norway

Filed Sep. 28, 1977, Ser. No. 837,413
Claims priority, application Norway, Sep. 30, 1976, 763337
Int. Cl.² B01D 21/26; G01N 33/16
U.S. Cl. 210—78 **9 Claims**

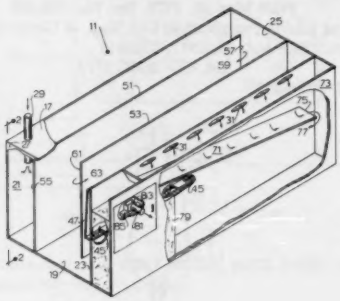
1. A method of separating uncoagulated blood into components by centrifugation comprising: placing a sample of uncoagulated blood in a test tube of glass or having a glass-like inner surface; placing a porous, elastic body in the upper layer of the uncoagulated blood sample; and centrifuging the test tube and blood sample to cause the porous body, in frictional contact with the inner surface of the test tube to press through the blood sample so as to effect above the porous body a layer of serum overlying a layer of red blood corpuscles which overlies the porous body.

4,134,833

WATER RECYCLE UNIT-GREY WATER CLEARIFIER

Dennis J. McCormick, 350 Wilson St., Petaluma, Calif. 94592

Filed Sep. 29, 1977, Ser. No. 838,008
Int. Cl.² C02B 1/18
U.S. Cl. 210—121 **13 Claims**



1. A water recycle unit for producing clear water output from grey water input, said unit comprising

container means for containing a quantity of water within the container while heavy materials, such as sand and dirt, settle to a lower zone and while lighter materials, such as oil and fibers, rise to an upper zone, leaving a central zone of clear water between the lower and upper zones,

input means for admitting grey water containing said materials to the interior of the container means,

outlet means for discharging clear water from said unit, said outlet means including an outlet opening located above said central zone, and

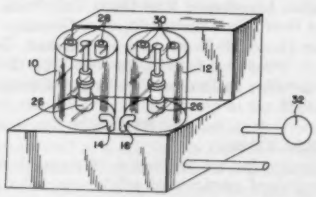
gate means for removing clear water from said central zone through said outlet means in response to the inflow of additional grey water into said unit through said input means, and wherein the gate means include an enclosed passageway having an inlet located within the central zone of clear water and an upper end open to said outlet opening of the outlet means and also include a sidewall which encloses one side of the passageway and which prevents grease or other materials in the upper zone from mixing with the clear water flowing upward through the passageway to the outlet opening.

4,134,834

HEMODIALYSIS APPARATUS

Donald Brous, Manchester, N.H., assignor to Artificial and Transplant Organs, Inc., Manchester, N.H.

Filed Jan. 6, 1976, Ser. No. 646,765
Int. Cl.² B01D 31/00
U.S. Cl. 210—127 **4 Claims**



1. In a hemodialysis proportioning system, a dialysate tank, a source of dialysate concentrate, a source of water, a water supply valve opening and closing said water source to said tank, a dialysate concentrate supply valve opening and closing said dialysate concentrate source to said tank, a metering pump means connected in series with said dialysate source and said

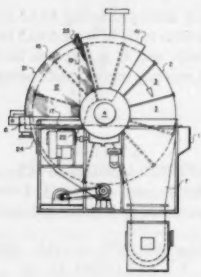
dialysate supply valve for feeding a measured amount of dialysate concentrate to said tank, a high level sensing means for sensing a predetermined high liquid level within said tank and a low level sensing means for sensing a predetermined low liquid level within said tank, a dialysate outlet valve opening and closing the dialysate from said tank to the patient, separate means responsive to said low level sensing means when the predetermined low liquid level is sensed for opening said water supply valve and said dialysate concentrate supply valve, for closing said dialysate outlet valve and for cycling said dialysate metering pump to meter a predetermined volume of dialysate concentrate to said tank, said separate means being responsive to said high level sensing means when said high liquid level is reached to open said dialysate outlet valve and to close said water and dialysate concentrate supply valves.

4,134,835

STEAM INJECTION ASSEMBLY FOR DISC FILTER

Dallas Solum, Salt Lake City, and Steven S. Davis, Bountiful, both of Utah, assignors to Envirotech Corporation, Menlo Park, Calif.

Filed Mar. 31, 1977, Ser. No. 783,098
Int. Cl.[2] B01D *35/18*
U.S. Cl. 210—178 **5 Claims**



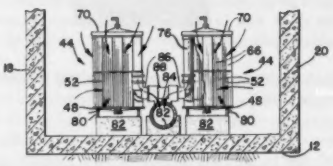
1. In a rotary disc vacuum filter for steam-assisted pressure differential filtration, the filter having a tank with upstanding sidewalls so as to contain slurry to be filtered; a disc filter element mounted in the tank for rotation about a horizontal trunnion so as to pass into and out of the slurry in the tank; and a hood mounted on the tank to define a chamber for a single disc filter element and through which the disc filter element rotatably moves, the hood having a pair of spaced-apart vertically-extending sidewalls to define a space through which sectors of the disc filter element sequentially pass, a spine wall which sealingly joins the pair of sidewalls, and a seal means mounted on the sidewalls of the hood to define a stream-retaining exit for the chamber, the seal means including two elongated flexible flaps which are mounted to opposite ones of the sidewalls so as to sealingly press against cakes of filter solids formed on the surface of the sectors of the disc filter element, an improved introduction assembly connected in flow communication to the hood for conveying steam into the chamber comprising first and second elongated tubular members each of which is connected to support one of the pair of sidewalls as an essential element of a tubular frame which is the sole support for the hood and each of which extends from the spine wall along the sidewall towards the seal means and comprising orifices formed through and spaced along each of said elongated tubular members between the spine wall and the seal means to provide flow communication between said elongated tubular members and the chamber.

4,134,836

FILTERING SYSTEM FOR SWIMMING POOLS OR THE LIKE

William N. Rowley, Palos Verdes Estates; Gordon F. Ehret, Alhambra, and Robert R. Williams, San Dimas, all of Calif., assignors to Wylain, Inc., Dallas, Tex.

Filed Jun. 2, 1976, Ser. No. 691,988
The portion of the term of this patent subsequent to Aug. 23, 1994, has been disclaimed.
Int. Cl.[2] B01D *27/04*
U.S. Cl. 210—232 **5 Claims**



1. A filtering system comprising:

a chamber having an inlet opening for receiving liquid to be filtered;

a plurality of unitary filter assemblies removably positioned in said chamber, each of said unitary filter assemblies comprising a plurality of filter units adapted to be disposed in said chamber in the path of said liquid for filtering said liquid, each of said filter units comprising a perforated tube and filter means extending around said tube, said filter units being formed in a plurality of groups extending in a vertically stacked relationship, a plate-like member having a plurality of nipples extending from its upper surface and its lower surface and registering with the respective tubes of adjacent groups of filter units for supporting the groups of filter units relative to each other so that the respective tubes of the filter units of each group register with the tubes of the filter units of an adjacent group, a collection manifold having an outlet and communicating with a plurality of said filter units for receiving the filtered liquid, and means cooperating with said collection manifold and said support means for releasably securing said groups of filter units in said vertically stacked relationship;

a header disposed in said chamber;

means for connecting the outlet of each of said manifolds to said header; and

means associated with said header for drawing the liquid to be filtered through said filter units, said manifolds, and said header for passage externally of said system.

4,134,837

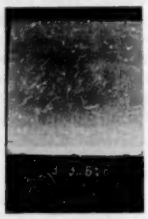
ETHYLENE-VINYL ALCOHOL COPOLYMER MEMBRANES HAVING IMPROVED PERMEABILITY CHARACTERISTICS AND A METHOD FOR PRODUCING THE SAME

Shuzo Yamashita; Shiro Nagata, both of Kurashiki, and Koichi Takakura, Okayama, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Jun. 10, 1976, Ser. No. 694,669
Claims priority, application Japan, Jun. 10, 1975, 50-69873
Int. Cl.[2] B29D *27/04*
U.S. Cl. 210—500 M **14 Claims**

1. A separation membrane formed from an ethylene-vinyl alcohol copolymer wherein said membrane has a micropore structure which is substantially uniform throughout its longitudinal and transverse sectional areas and wherein its constituent particles have an average diameter in the range of 100 to 10000

Angstrom units as electron-microscopically determined for a dry membrane and are bonded to each other to form a mem-



brane that is substantially free from pores in excess of 2 microns in diameter.

4,134,838

FABRIC CONDITIONING PRODUCT

David C. Hooper, Ashford; George A. Johnson, and Donald Peter, both of Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Feb. 15, 1978, Ser. No. 878,133

Claims priority, application United Kingdom, Feb. 15, 1977, 6249/77

Int. Cl.[2] D06M *13/34*

U.S. Cl. 252—8.8 **12 Claims**

1. A fabric conditioning composition comprising an effective amount of from 1 to 99.99% by weight of a fabric softener and a deodorising amount of from 0.01 to 10% by weight of a deodorant perfume, and from 0 to 98.99% by weight of fabric conditioning adjuncts, the fabric conditioning composition having an odour reduction value within the range of from 0.50 to 3.5 as measured by the modified Whitehouse and Carter test.

4,134,839

SOIL RESISTANT SPIN FINISH FOR POLYAMIDE TEXTILE YARN

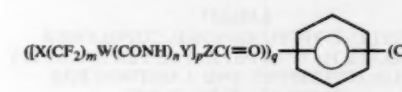
Robert M. Marshall, Chester, Va., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Feb. 2, 1978, Ser. No. 874,671

Int. Cl.[2] D06M *13/00*

U.S. Cl. 252—8.6 **10 Claims**

1. A spin finish for polyamide yarn to be processed at high temperature into bulked textile yarn that is oil repellent and resistant to soiling by oily materials, said spin finish comprising an oil in water emulsion containing 5 to 20 percent by weight of a first oil composition consisting essentially of about 45 to 55 weight percent of an alkanol amide which is the reaction product of coco fatty acid containing about 6 to 18 carbon atoms and diethanol amine, and about 45 to 55 weight percent of a fluorochemical compound having the formula



wherein the attachment of the fluorinated radicals and the radicals CO_2B to the nucleus is in asymmetrical positions with respect to rotation about the axis through the center of the nucleus; wherein "X" is fluorine, or perfluoroalkoxy of 1 to 6 carbon atoms, and m has arithmetic mean between 2 and 20; n is zero or unity; "W" and "Y" are alkylene, cycloalkylene or alkyleneoxy radicals of combined chain length from 2 to 20 atoms; $(CF_2)_m$ and "Y" have each at least 2 carbon atoms in the main chain; "Z" is oxygen and p is 1, or "Z" is nitrogen and p is 2; q is an integer of at least 2 but not greater than 5; "B" is CH_2RCHOH or is $CH_2RCHOCH_2RCHOH$ where "R" is hydrogen or methyl, or "B" is $CH_2CH(OH)CH_2Q$ where Q is halogen, hydroxy, or nitrile; or "B" is $CH_2CH(OH)CH_2OCH_2CH(OH)CH_2Q$; and r is an integer of at least 1 but not greater than q; and $X(CF_2)_m$, W and Y are straight chains, branched chains or cyclic; and wherein the substituent chains of the above general formulas are the same or different, said oil in water emulsion being mixed with 5 to 20 percent by weight of said emulsion of a second oil composition consisting essentially of from about 40 to 50 weight percent of an alkyl stearate wherein the alkyl group contains 4 to 18 carbon atoms, about 25 to 30 weight percent sorbitan monooleate, and about 25 to 30 weight percent of polyoxyethylene tallow amine containing about 18 to 22 moles of ethylene oxide per mole of polyoxyethylene tallow amine.

4,134,840

SOFTENER COMPOSITION FOR FABRICS

Yutaka Minegishi, Miyashiromachi, and Haruhiko Arai, Narashino, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Aug. 26, 1977, Ser. No. 827,857

Claims priority, application Japan, Sep. 17, 1976, 51-111544

Int. Cl.[2] D06M *13/46*

U.S. Cl. 252—8.9 **8 Claims**

1. A softener composition for fabrics consisting essentially of (A) a quaternary ammonium salt having in the molecule one or two alkyl groups having 11 to 24 carbon atoms and (B) an ether carboxylate having the formula:

$$RO(CH_2CH_2O)_pR'COOM$$

wherein R is alkyl or alkenyl having 10 to 22 carbon atoms, p is a number of from zero to 5, M is an alkali metal or water-soluble ammonium group, and R′ is alkylene having 1 to 3 carbon atoms, the (A)/(B) mixing molar ratio being in the range of from 1/0.5 to 1/1.

4,134,841

FIBER LUBRICANTS

Kisoon Park, Charleston, and Robert H. Lowery, Alum Creek, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

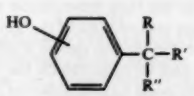
Filed Mar. 10, 1978, Ser. No. 885,297

Int. Cl.[2] D06M *13/18*

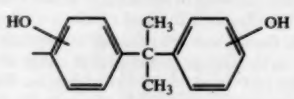
U.S. Cl. 252—8.9 **9 Claims**

1. A stabilized fiber lubricant composition comprising:

(A) from 5 to 20 weight percent of a non-hindered polyphenol of the formula:

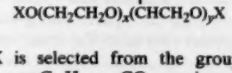


having 2 or 3 hydroxyphenyl groups wherein R is methyl or ethyl; R′ is hydroxyphenyl or



R″ is methyl or hydroxyphenyl; and

(B) from 80 to 95 weight percent of a polyoxyalkylene lubricant of the formula:



wherein X is selected from the group of hydrogen, $-C_mH_{2m+1}$ or $C_mH_{2m+1}CO-$; m is an integer having a

value of from 1 to 22; and the sum of x plus y is such that the average molecular weight of said polyether lubricant is from about 800 to about 20,000 or the ether or ester derivative thereof; and wherein said percentages are based on the combined weights of (A) and (B).

4,134,842

MOLDED PLASTIC BEARING ASSEMBLY

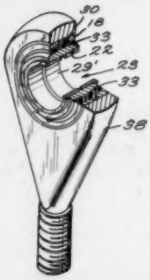
Stanley S. Orkin, Rockville, and Edward J. Nagy, Windsor, both of Conn., assignors to Kamatics Corporation, Bloomfield, Conn.

Continuation-in-part of Ser. No. 601,956, Aug. 4, 1975, Pat. No. 4,048,370, which is a division of Ser. No. 452,359, Mar. 18, 1974, Pat. No. 3,929,396, which is a continuation-in-part of Ser. No. 241,007, Apr. 4, 1972, Pat. No. 3,806,216. This application Sep. 13, 1977, Ser. No. 832,995

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.[2] **C10M** *5/00, 7/00;* **B32B** *0/00;* **F16C** *27/00*

U.S. Cl. 252—12.6 **18 Claims**



1. A bearing assembly comprising two coengaging members movable relative to one another, the first of said members having a ceramic bearing surface provided by a thin ceramic coating on a metal substrate the thickness of said ceramic coating ranging from 0.0001 to 0.02 inches and the bearing surface of said other member comprising a woven fiber matrix impregnated with a cured acrylate composition, the bearing surface of said first member being coated with a thin film of a parting agent to prevent adhesion thereof to the bearing surface of said other member.

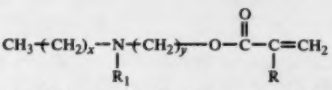
14. A shaped bearing member, comprising a woven fiber matrix impregnated with a cured acrylate composition, said acrylate composition being selected from the group consisting of:

(a) a mixture of a major amount of a liquid acrylic ester selected from the group consisting of di-, tri- and tetraesters of an acrylic acid and a polyhydric alcohol, a minor amount of a low molecular weight prepolymer of an ester of a low molecular weight alcohol having a terminal vinyl group and an aromatic polycarboxylic acid in solution in said acrylic ester and an organic amide of the formula

wherein R is selected from the group consisting of hydrogen and aliphatic hydrocarbon of 1–20 carbon atoms in an amount sufficient to copolymerize said acrylic ester and prepolymer,

(b) a mixture of acrylic ester monomer, a peroxidic initiator in an amount sufficient to initiate polymerization of said monomer and an aminoalkoxyalkylamine of the formula R_1-N(H)R_2[OR_3]$_x$N(H)R_4 wherein x is an integer of 1–6 inclusive, each of R_1 and R_4 is selected from the group consisting of hydrogen and lower alkyl and each of R_2 and R_3 is a lower alkyl linking bridge between N and O, in an amount sufficient to accelerate the polymerization of said monomer,

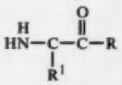
(c) a mixture of an acrylic ester of an alkyl amino alkyl alcohol and an effective amount of a hydroperoxide catalyst, said acrylic ester having the formula



wherein x is an integer of 0–5 inclusive, y is an integer of 1–6 inclusive, R is selected from the group consisting of hydrogen, halogen, hydroxy, cyano and lower alkyl and R_1 is selected from the group consisting of hydrogen and alkyl having 1–6 carbon atoms,

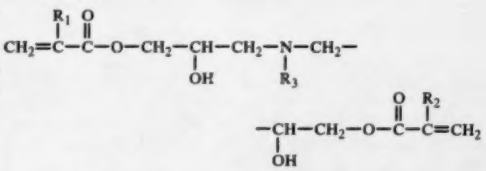
(d) a mixture of a liquid acrylic ester monomer selected from the group consisting of diesters of an acrylic acid and a polyhydric alcohol, acrylic esters of cyclic etheralcohols, acrylic esters of amino alcohols and mixtures thereof, a peroxidic initiator and an oxyalkylamine of the formula $(H)_m N[(CH_2)\times(OR_1)_y OR_2]_n$ wherein m and n are each integers of 1 to 2 inclusive, the total of m and n is 3, x is an integer of 1 to 6 inclusive, y is an integer of 0 to 6 inclusive, R_1 and R_2 are lower alkyl,

(e) a mixture of an acrylic ester monomer selected from the group consisting of di-, tri- and tetraesters of an acrylic acid and a polyhydric alcohol, acrylic esters of cyclic ether alcohols, acrylic esters of amino alcohols and mixtures thereof, a peroxidic initiator in an amount sufficient to initiate the polymerization of said monomer and a member selected from the group consisting of rhodanine and a hydrazide of the formula



wherein R and R^1 are selected from separate groups and an interconnected group forming a cyclic ring, R is further selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and alkoxy and R^1 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, acyl and dithiocarbonyl in an amount sufficient to accelerate the polymerization of said monomer; and

(f) a mixture of a monomer of the formula

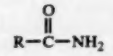


wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, cyano and lower cyanoalkyl; at least one equivalent of an acid for each equivalent of said monomer, said acid being selected from the group consisting of acrylic acid and lower alkyl acrylic acids; an initiator selected from the group consisting of t-butyl perbenzoate, t-butyl peracetate and di-t-butyl diperphthalate, said initiator being present in an amount sufficient to initiate the polymerization of said monomer; a trihydroxy benzene inhibitor and an accelerator selected from the group consisting of benzhydrazide and N-aminorhodanine.

17. A method of producing a molded bearing assembly comprising two coengaging members movable relative to one another, the first of said members having a bearing surface selected from the group consisting of metal and ceramic and the bearing surface of said other member comprising a woven

fiber matrix impregnated with an acrylate composition, the bearing surface of said first member being coated with a thin film of a parting agent to prevent adhesion thereof to said other bearing surface, the steps comprising coating said first bearing member with a thin film of a parting agent, positioning the woven fiber matrix adjacent the said parting agent coated first bearing member, impregnating said woven fiber matrix with a curable acrylate composition and curing said acrylate composition in the absence of an oxygen-containing gas at a temperature ranging from ambient temperature to 325° F., thereby producing said other member and said molded bearing assembly, said acrylate composition being selected from the group consisting of:

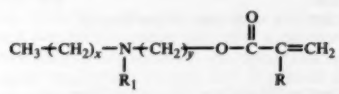
(a) a mixture of a major amount of a liquid acrylic ester selected from the group consisting of di-, tri- and tetraesters of an acrylic acid and a polyhydric alcohol, a minor amount of a low molecular weight prepolymer of an ester of a low molecular weight alcohol having a terminal vinyl group and an aromatic polycarboxylic acid in solution in said acrylic ester and an organic amide of the formula



wherein R is selected from the group consisting of hydrogen and aliphatic hydrocarbon of 1–20 carbon atoms in an amount sufficient to copolymerize said acrylic ester and prepolymer,

(b) a mixture of acrylic ester monomer, a peroxidic initiator in an amount sufficient to initiate polymerization of said monomer and an aminoalkoxyalkylamine of the formula R_1-N(H)R_2[OR_3]$_x$N(H)R_4 wherein x is an integer of 1–6 inclusive, each of R_1 and R_4 is selected from the group consisting of hydrogen and lower alkyl and each of R_2 and R_3 is a lower alkyl linking bridge between N and O, in an amount sufficient to accelerate the polymerization of said monomer,

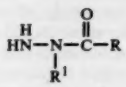
(c) a mixture of an acrylic ester of an alkyl amino alkyl alcohol and an effective amount of a hydroperoxide catalyst, said acrylic ester having the formula



wherein x is an integer of 0–5 inclusive, y is an integer of 1–6 inclusive; R is selected from the group consisting of hydrogen, halogen, hydroxy, cyano and lower alkyl and R_1 is selected from the group consisting of hydrogen and alkyl having 1–6 carbon atoms,

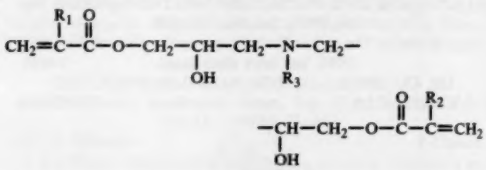
(d) a mixture of a liquid acrylic ester monomer selected from the group consisting of diesters of an acrylic acid and a polyhydric alcohol, acrylic esters of cyclic etheralcohols, acrylic esters of amino alcohols and mixtures thereof, a peroxidic initiator and an oxyalkylamine of the formula $(H)_m N[(CH_2)_x(OR_1)_y OR_2]_n$ wherein m and n are each integers of 1 to 2 inclusive, the total of m and n is 3, x is an integer of 1 to 6 inclusive, y is an integer of 0 to 6 inclusive, R_1 and R_2 are lower alkyl,

(e) a mixture of an acrylic ester monomer selected from the group consisting of di-, tri- and tetraesters of an acrylic acid and a polyhydric alcohol, acrylic esters of cyclic ether alcohols, acrylic esters of amino alcohols and mixtures thereof, a peroxidic initiator in an amount sufficient to initiate polymerization of said monomer and a member selected from the group consisting of rhodanine and a hydrazide of the formula



wherein R and R^1 are selected from separate groups and an interconnected group forming a cyclic ring, R is further selected from the group consisting of hydrogen, alkyl, cycloalkyl, aryl and alkoxy and R^1 is selected from the group consisting of hydrogen, alkyl, cycloalkyl, acyl and dithiocarbonyl in an amount sufficient to acclerate the polymerization of said monomer; and

(f) a mixture of a monomer of the formula



wherein R_1 and R_2 are selected from the group consisting of hydrogen and lower alkyl and R_3 is selected from the group consisting of lower alkyl, lower hydroxyalkyl, cyano and lower cyanoalkyl; at least one equivalent of an acid for each equivalent of said monomer, said acid being selected from the group consisting of acrylic acid and lower alkyl acrylic acids; an initiator selected from the group consisting of t-butyl perbenzoate, t-butyl peracetate and di-t-butyl diperphthalate, said initiator being present in an amount sufficient to initiate the polymerization of said monomer; a trihydroxy benzene inhibitor and an accelerator selected from the group consisting of benzhydrazide and N-aminorhodanine.

4,134,843

DEUTERATED LUBRICANT

Neal D. Rebuck, Southampton, and Alfeo A. Conte, Jr., Warrington, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 7, 1977, Ser. No. 775,238

Int. Cl.[2] **C10M** *1/10, 1/16, 3/02;* **C10G** *41/00*

U.S. Cl. 252—28 **16 Claims**

1. A lubricant, comprising:

a first nondeuterated hydrocarbon fluid; in admixture with a second hydrocarbon fluid wherein a quantity of the hydrogen atoms of the hydrocarbon molecules contained therein have been replaced with deuterium atoms.

4,134,844

SOLID PARTICLES CONTAINING LUBRICATING OIL COMPOSITION AND METHOD FOR USING SAME

Donald L. DeVries, South Holland, and James M. DeJovine, Homewood, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 752,225, Dec. 20, 1976, Pat. No. 4,094,799. This application Apr. 3, 1978, Ser. No. 893,098

Int. Cl.[2] **C10M** *1/10, 3/02, 5/02, 7/04*

U.S. Cl. 252—30 **12 Claims**

1. A composition of matter comprising a major amount by weight of oil of lubricating viscosity; a minor amount by weight of solid particles effective to improve the lubricating properties of said composition; and a minor amount by weight of a functional polymer, said functional polymer being the reactant product of (1) an oxidized high molecular weight amorphous copolymer of essentially ethylene and propylene having a number average molecular weight of at least about 20,000, and at least 140 pendant methyl groups per 1,000 chain carbon atoms reacted with (2) an aliphatic amine or polyamine,

said polymer being present in an amount effective to reduce the deposit forming tendencies of said composition.

3. The compositions of claim 1 wherein said solid particles are selected from the group consisting of graphite, molybdenum disulfide, zinc oxide and mixtures thereof, said solid particles are present in an amount of about 0.05% to about 5% by weight of the total composition and said functional polymer is present in an amount of about 0.1% to about 12% by weight of the total composition.

4,134,845

SULPHURIZED MATERIAL AND A LUBRICANT COMPOSITION

Jamil M. Wakim, Burlington, Canada, assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 7, 1977, Ser. No. 858,137
Claims priority, application Canada, Dec. 14, 1976, 267827
Int. Cl.[2] C10M *1/38, 3/32, 5/28, 7/36*
U.S. Cl. 252—48.6 **7 Claims**

1. A sulphurized material obtained by:

(a) dissolving inedible tallow in a selective solvent, cooling, filtering and evaporating the solvent from the filtrate, to obtain an inedible tallow oil, (b) mixing the product of step (a) in a weight ratio of between 70:30 and 30:20 with the alcoholysis product of step (a) obtained by use of an alkanol having 1–30 carbon atoms in a weight ratio of between 70:30 and 30:70 oil to alcoholysis product resulting in mixed starting material, and (c) sulphurizing said mixed starting material to obtain a sulphurized material having a sulphur content between 5 and 30%w.

2. A material as in claim 1 wherein at least part of the alcoholysis product in step (b) is replaced with an ester of an unsaturated fatty acid having 12–30 carbon atoms and an alkanol, which ester is different from said alcoholysis product.

7. A lubricant composition comprising a major amount of an oil of lubricating viscosity and from about 0.1–20% by weight of a material according to claim 1.

4,134,846

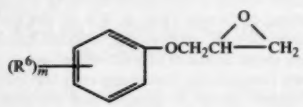
MULTIPURPOSE HYDROCARBON FUEL AND LUBRICATING OIL ADDITIVE MIXTURE

Warren H. Machleder, Blue Bell, and Joseph M. Bollinger, North Wales, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 671,460, Mar. 29, 1976, abandoned, which is a continuation-in-part of Ser. No. 536,072, Dec. 24, 1974, abandoned. This application Jul. 5, 1977, Ser. No. 813,028
The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.
Int. Cl.[2] C10M *1/32*
U.S. Cl. 252—51.5 A **24 Claims**

1. A composition comprising a blend of (A) a major proportion of a hydrocarbon fuel, a lubricating oil, or a mixture of a hydrocarbon fuel and a lubricating oil, and (B) a minor detergent amount of a multipurpose additive comprising a mixture of:

(1) the reaction product of (a) a glycidyl ether compound of the formula



where R^6 is an aliphatic hydrocarbon group having at least 8 carbon atoms and m is 1–3, and (b) an amine having at least one amino group having at least one active hydrogen atom, and

(2) a polyalkylene phenol.

4,134,847

METHOD FOR THE PRODUCTION OF A COLOR DEVELOPER AND THE OBTAINED COLOR DEVELOPER

Shin-ichi Oda, Hyogo; Tosaku Okamoto; Akira Nakanishi, both of Osaka, and Takio Kuroda, Hyogo, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo and Sanko Kagaku Co., Ltd., Fukuoka, both of, Japan

Filed May 27, 1977, Ser. No. 801,425
Claims priority, application Japan, May 29, 1976, 51-62790
Int. Cl.[2] G03G *9/00*
U.S. Cl. 252—62.1 P **40 Claims**

1. A method for the production of a color developer which comprises the steps of preparing a mixture of at least one aromatic carboxylic acid, at least one water-in-soluble organic polymer and at least one oxide or carbonate of polyvalent metal and water and heating said mixture to melt at least one of aromatic carboxylic acid and said polymer and to make said mixture into a homogeneous mass.

21. A color developer obtained by the process comprising the steps of preparing a mixture of at least one aromatic carboxylic acid, at least one water-insoluble organic polymer and at least one oxide or carbonate of polyvalent metal and water and heating said mixture to melt at least one of aromatic carboxylic acid and said polymer and to make said mixture into a homogeneous mass.

4,134,848

COMPOSITE FOR IMPROVED STRIPLINE BOARD MATERIAL

Arnold Adicoff, Ridgecrest; Eugene C. Martin, China Lake, and Rena Y. Yee, Ridgecrest, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1976, Ser. No. 700,279
Int. Cl.[2] C08K *9/06*
U.S. Cl. 252—63.2 **5 Claims**

1. Dielectric material comprising:

hollow, air-filled, glass microspheres;

a coating of a difunctional silane chemically bonded to said microspheres;

an ethylene/acrylic acid copolymer chemically bonded to said silane; and

a second polymer selected from the group consisting of homo- or copolymers of ethylene, propylene, and/or styrene, said second polymer forming a solid matrix physically containing said spheres and forming an intimate mixture with said spheres, said coating, and said ethylene/acrylic acid copolymer;

said spheres being uniformly dispersed in said matrix so as to give uniform dielectric properties to said dielectric material.

4,134,849

CONSTANT BOILING ADMIXTURES

William M. Hutchinson, deceased, late of Bartlesville, Okla., by Florence M. Hutchinson, executrix, Claremore, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 783,244, Mar. 31, 1977, Pat. No. 4,086,180, which is a division of Ser. No. 690,807, May 27, 1976, Pat. No. 4,039,465, which is a division of Ser. No. 602,353, Aug. 6, 1975, Pat. No. 4,024,086. This application Jan. 30, 1978, Ser. No. 873,646
Int. Cl.[2] C11D *7/50, 7/30;* **C23G** *5/02*
U.S. Cl. 252—171 **3 Claims**

1. A substantially constant boiling admixture of 1,1-difluoro-1,2-dichloroethane, diethyl ether, and ethanol wherein said 1,1-difluoro-1,2-dichloroethane represents about 83.8 weight percent, said diethyl ether about 14.5 weight percent, and said ethanol about 1.7 weight percent.

4,134,850

BLEACHING COMPOSITION

Joseph E. McCrudden, Warrington, and Robert E. Talbot, Burtonwood, both of England, assignors to Interox Chemicals Limited, London, England

Filed May 6, 1976, Ser. No. 683,811

Claims priority, application United Kingdom, Dec. 23, 1975, 52520/75

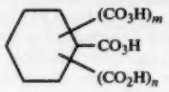
Int. Cl.[2] **C11D** *3/395, 7/54;* **D06L** *3/02*

U.S. Cl. 252—186 **13 Claims**

1. A bleaching or detergent composition comprising a surfactant, a builder salt and a bleaching agent, said bleaching agent is selected from the group consisting of

acylperoxides capable of generating an aliphatic peroxyacid or anion thereof in aqueous solution, if necessary in conjunction with a persalt, said aliphatic peroxyacid being selected from the group consisting of:

(i) a peroxyacid having the general formula



wherein

$0 \leqq m \leqq 5$

$0 \leqq n \leqq 5$ and

$m + n \geqq 1$

(ii) mono and diethylenically unsaturated derivatives of said peroxyacid and

(iii) nitro, chloro and lower alkyl substituted derivatives of said peroxyacid and of said mono and diethylenically unsaturated derivatives of said peroxyacid.

4,134,851

ALUMINOPHOSPHATE LUMINESCENT GLASS

Richard M. Klein, Framingham; William F. Nelson, Weston; Romano G. Pappalardo, and Leslie A. Riseberg, both of Sudbury, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sep. 16, 1977, Ser. No. 833,976

Int. Cl.[2] **C09K** *11/46*

U.S. Cl. 252—301.4 P **2 Claims**

1. A luminescent glass comprising a host material and a dopant material, wherein the host material consists essentially of between 25 mole percent and 36 mole percent Al_2O_3 with the balance P_2O_5, and the dopant material consists essentially of between 0.5 and 1 cation percent Ce^{3+} and between 6 and 9 cation percent Tb^{3+}, said percentages of Ce^{3+} and Tb^{3+} based on the total cation content of the luminescent glass, whereby the luminescent glass emits visible radiation, predominantly green, when excited by ultraviolet light.

4,134,852

PROCESS FOR PREPARING MIXED METAL OXIDE CATALYSTS

Timothy E. Volin, Tuxedo, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Sep. 2, 1977, Ser. No. 830,050

Int. Cl.[2] **B01J** *23/10, 23/58, 23/64, 23/78*

U.S. Cl. 252—472 **23 Claims**

1. In a process for synthesizing a mixed metal oxide catalyst material comprising at least one platinum group metal and having a predetermined composition and a predetermined crystal structure by a method comprising grinding and heating a mixture of powders to obtain a product of predetermined composition, the improvement which comprises subjecting a mixture of powders selected from at least one of the group consisting of elemental metals, alloys and compounds which on processing will convert to the desired mixed metal oxide, said mixture of powders being formulated to contain, or on heat treatment in an oxidizing atmosphere to contain, a stoichiometric ratio of the constituents of the predetermined mixed metal oxide composition to dry, high energy impact milling for a period of time sufficient to produce a mechanically-alloyed powder which will convert on heat treatment to an essentially single phase structure of the predetermined composition and crystal structure, and heating said mechanically-alloyed powder in an oxidizing atmosphere to effect conversion to said mixed metal oxide catalyst material.

4,134,853

PHOTOCHROMIC COMPOSITION

Robert Ehrlich, and Melvin Ehrlich, both of 51 The Intervale, Roslyn Estates, N.Y. 11576

Filed Dec. 30, 1976, Ser. No. 755,740

Int. Cl.[2] **G03C** *1/00;* **A63H** *9/00*

U.S. Cl. 252—300 **9 Claims**

1. A photochromic composition consisting essentially of the calcined mixture of the anatase form of titanium dioxide, ferrous oxide in the range of about 2% to 10% of the weight of the anatase form of titanium dioxide and lead oxide in the range of about 0.1% to 1% of the weight of titanium dioxide.

4,134,854

NONIONIC SURFACTANT WITH LOW POUR POINT

John G. Milligan, Austin, Tex., assignor to Texaco Development Corp., New York, N.Y.

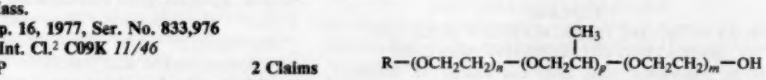
Continuation-in-part of Ser. No. 356,824, May 5, 1973, abandoned, which is a continuation-in-part of Ser. No. 32,423, Apr. 27, 1970, Pat. No. 3,752,857, which is a continuation-in-part of Ser. No. 790,445, Jan. 10, 1969, abandoned, which is a continuation-in-part of Ser. No. 671,995, Oct. 2, 1967, abandoned. This application Jul. 7, 1975, Ser. No. 593,359

The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.

Int. Cl.[2] **B01F** *17/00*

U.S. Cl. 252—351 **2 Claims**

1. A surfactant which is a mixture of compounds having the formula



wherein R is a straight or branched alkyl group from 8 to 20 carbon atoms, n and m are from 2 to 10 and are chosen such that $n/n+m$ is within the range of 0.2 to 0.6 and p is 0.5 to 3 such that $p/n+m$ is within the range of about 0.119 to 0.25.

4,134,855

PRODUCTION OF TRANSITION METAL COMPOSITION

John P. Candlin, Aston, Nr. Stevenage, and John A. A. A. G. Segal, London, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 8, 1977, Ser. No. 822,908

Claims priority, application United Kingdom, May 25, 1977, 22045/77

Int. Cl.[2] **C08F** *4/10, 4/50, 4/64, 4/68*

U.S. Cl. 252—429 B **10 Claims**

1. A process which comprises contacting a compound of a transition metal of Group IVA or VA of the Periodic Table with an organo-metallic compound, wherein the compound of the transition metal contains at least one η^6-arene group and is selected from compounds containing only the transition metal and the η^6-arene group or groups, and titanium dichloride-aluminium chloride-arene complex compounds, and the organo-metallic compound is a compound which (A) has a general formula $MX_nY_{2-n}mL$; or (B) is a mixed aluminium-magnesium compound of the formula:

$$Z_3Al[MgZ_2]_yAlZ_3$$

where
M is a metal which is present in the divalent form selected from magnesium and manganese;
X is a halogen atom excluding fluorine;
Y, or each Y, is, independently, a group —R, —OR, $-(CH_2)_xSiR_3$ or $-OSiR_3$;
L is an organic Lewis Base compound which is a hydrocarbyl compound containing at least one functional group selected from amine, phosphine, ether and thioether functional groups;
R is a hydrocarbyl group;
each Z is, independently, a group —R or —OR;
m has a value from 0 up to 2;
n has a value from 0 up to 1;
x has a value from 1 up to 4; and
y is an integer from 1 up to 20.

4,134,856

CATALYST FOR HYDRO-REFINING HYDROCARBON OILS

Takuji Itoh, Sayama; Satoshi Sakurada, Omiya; Shohei Okano, Tokorozawa, and Takashi Obayashi, Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 668,609, Mar. 19, 1976, Pat. No. 4,008,149. This application Dec. 3, 1976, Ser. No. 747,431
Claims priority, application Japan, Apr. 18, 1975, 50/47271
Int. Cl.[2] B01J *21/04, 21/12, 23/84, 27/04*
U.S. Cl. 252—439 **6 Claims**

1. A hydrorefining catalyst comprising at least one hydrogenation metal or an oxide or a sulfide of a metal selected from the group consisting of Group VIB metals and Group VIII metals and mixtures thereof supported on an alumina carrier containing from about 5 to about 25 weight % silica, said catalyst having a specific surface area in the range of from about 250 to about 300 m^2/g and a pore volume distribution characterized in that (1) the volume of pores having a diameter of 60–150A is at least about 80% of the volume of pores having a diameter of 0–150A, (2) the volume of pores having a diameter of 150–300A is less than about 20% of the volume of pores of 0–300A, (3) the volume of pores having a diameter of 0–600A is in the range of from about 0.45 to about 0.60 ml/g, and (4) the volume of pores having a diameter of 150–2000A is less than about 0.01 ml/g.

4,134,857

USE OF TANNIC OR GALLIC ACID TO PRODUCE LOW BEVERAGE SOLUBLE IRON CONTENT FILTER AID

Timothy G. Bradley, Denver, and Raymond L. McAdam, Littleton, both of Colo., assignors to Johns-Manville Corporation, Denver, Colo.

Filed Feb. 7, 1977, Ser. No. 766,096
Int. Cl.[2] B01D *39/06*
U.S. Cl. 252—450 **18 Claims**

1. A method for the reduction of the beverage soluble iron content of a filter aid comprising diatomite or perlite which comprises contacting the filter aid in granular form with tannic acid, gallic acid or mixtures thereof.

14. A filter aid comprising diatomite or perlite which has had its initial content of beverage soluble iron reduced by treating the diatomite in accordance with the method of claim 1.

4,134,858

CATALYSTS, THEIR MANUFACTURE FOR USE IN DEHYDROGENATION REACTIONS

Philippe Courty, Houilles, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

Continuation-in-part of Ser. No. 573,880, May 2, 1975, abandoned. This application Dec. 21, 1977, Ser. No. 863,002
Claims priority, application France, May 7, 1974, 74 15977
Int. Cl.[2] B01J *29/06, 29/00, 29/10*
U.S. Cl. 252—455 R **15 Claims**

1. A catalyst comprising iron oxide, chromium oxide, 5–40% by weight of kaliophyllite and excess potassium oxide with respect to said kaliophyllite, especially for dehydrogenating hydrocarbons, as obtained by the process comprising the steps of:
admixing at least one iron compound, at least one chromium compound and at least one potassium compound;
moistening and malaxing the resulting mixture and adding thereto at least one clayish material selected from the group consisting of kaolinite, halloisite, bentonite, montmorillonite, attapulgite and mixtures thereof, and homogenizing the mixture to form a paste;
shaping said paste, drying and roasting it at a temperature of bout 870 – 1050° C, said clayish material being used in such a proportion as to obtain after said roasting a final catalyst containing 5 to 40% by weight of kaliophillite of the formula Al_2O_3, 2 SiO_2, K_2O as formed by the reaction between said clayish material and a portion of said potassium compound; the iron, chromium and potassium compounds being used in proportions corresponding as oxides, to ratios by weight:

$$\frac{Fe_2O_3}{K_2O} \text{ from 1/1 to 10/1}$$

$$\frac{CrO_3}{K_2O} \text{ from 0.05/1 to 0.4/1, and}$$

$$\frac{Fe_2O_3}{CrO_3} \text{ from 15/1 to 40/1}$$

and said potassium compound being used in excess with respect to the amount liable to combine with said clayish material to form said kaliophyllite, and thereby forming said catalyst.

9. A catalyst according to claim 1, further comprising from 0.1 to 5% by weight of at least one oxide of at least one metal selected from copper, vanadium, zinc, magnesium, manganese and bismuth.

4,134,859

OXIDATION CATALYST FOR PREPARING UNSATURATED ACIDS AND ALDEHYDES

Abraham N. Kurtz; Erlind M. Thorsteinson, and Harry J. Decker, all of Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 606,973, Aug. 25, 1975, Pat. No. 4,034,008. This application Mar. 21, 1977, Ser. No. 779,786
Int. Cl.[2] B01J *23/16*
U.S. Cl. 252—456 **9 Claims**

1. A calcined oxidation catalyst which is devoid of potassium and which contains the oxides of the elements Mo, Bi, Fe, T, Si and X in the ratio

$$Mo_aBi_bFe_cT_dSi_eX_f$$

wherein
T is selected from the group consisting of Ni and Co,
X is selected from the group consisting of Ru and Sb,
a is 10,
b is 0.1 to 5.0,
c is d/3 to d/5.5,
d is 2.0 to 9.0,

e is 1 to 20, and
f is 0.1 to 1.0,
said catalyst prior to calcination containing in the metal compounds mixture the atom Cl_g wherein g has a positive value up to 5 and wherein the calcination is carried out at a temperature below the fusion and volatilization temperature of the metal compounds.

4,134,860
CATALYST MANUFACTURE

Saul G. Hindin, Mendham, and Joseph C. Dettling, Jackson, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Filed Apr. 29, 1977, Ser. No. 792,174
Int. Cl.[2] B01J *21/04, 23/40, 23/74*
U.S. Cl. 252—466 PT **35 Claims**

1. A method of manufacturing a composition having a water insoluble catalytically promoting component thereon, which method consists essentially of mixing a solution of a water-soluble, catalytically-promoting metal component and finely-divided, high surface area, refractory oxide which is sufficiently dry to absorb essentially all of said solution, converting said catalytically-promoting metal component in the resulting composite to water-insoluble form while said composite remains essentially devoid of free liquid, comminuting said water-insoluble, catalytically-promoting metal-refractory oxide material as a slurry, depositing the slurry on a solid, macrosize carrier, and drying the resulting composite.

4,134,861
NITRATE SELECTIVE AMIDINE ION EXCHANGE RESINS

Lubor Roubinek, London, England, assignor to Diamond Shamrock (Polymers) Limited, England

Filed Jul. 1, 1977, Ser. No. 812,415
Claims priority, application United Kingdom, Jul. 3, 1976, 27781/76
Int. Cl.[2] C08F *8/32;* **C02B** *1/56*
U.S. Cl. 521—32 **16 Claims**

1. A water-swellable, ion exchange resin comprising a cross-linked vinyl polymeric matrix and amidine groups chemically bonded to the matrix and which have the formula

where Q represents hydrogen or C_{1-4} alkyl and both of R represent C_{1-6} alkyl or one R is C_{1-6} alkyl and one R is benzyl, which in total provide up to 12 carbon atoms.

9. A method of selectively removing nitrate ion from water comprising contacting the water with a water-swellable ion exchange resin comprising a cross-linked vinyl polymeric matrix and amidine groups chemically bonded to the matrix and which have the formula

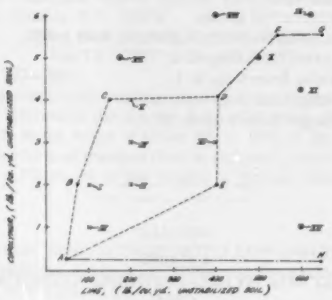
where Q represents hydrogen or C_{1-4} alkyl and both of R represent C_{1-6} alkyl or one R is C_{1-6} alkyl and one R is benzyl, which in total provide up to 12 carbon atoms.

13. A method of making a resin according to claim 1 comprising reacting crosslinked polyacrylate with a primary amine to form the corresponding polyacrylamide, halogenating this to form the corresponding polyimidoyl halide and reacting this with a primary or secondary amine or ammonia.

4,134,862
METHOD FOR STABILIZING SOIL AND FOR PROVIDING A BACKFILL FOR GROUNDING MEMBERS

Donald A. Eden, Mercer Island, and William H. Griffin, Bellevue, both of Wash., assignors to Construction Aids Technology, Inc., Mercer Island, Wash.

Filed Jun. 14, 1977, Ser. No. 806,445
Int. Cl.[2] C08L *3/02*
U.S. Cl. 260—17.4 GC **36 Claims**



1. A method for stabilizing water-containing soil to form a relatively dry, compactable soil mass comprising the steps of:
combining an alkali metal salt of a starch-polyacrylonitrile or a starch-polymethacrylonitrile graft copolymer and a hydratable material with water-containing soil, said graft copolymer and said hydratable material being combined with said soil in an amount effective to remove water from said soil by absorption of at least a portion of said water in said soil by said graft copolymer and by at least partially hydrating said hydratable material and effective to form said relatively dry, compactable soil mass.

4,134,863
HIGHLY ABSORBENT GRAFT COPOLYMERS OF POLYHYDROXY POLYMERS, ACRYLONITRILE, AND ACRYLIC COMONOMERS

George F. Fanta; Edward I. Stout, both of Peoria, and William M. Doane, Morton, all of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Dec. 6, 1976, Ser. No. 748,032
Int. Cl.[2] C08L *3/02*
U.S. Cl. 260—17.4 GC **13 Claims**

1. A method of preparing water-insoluble, aqueous fluid-absorbing compositions comprising the following steps:
a. graft polymerizing acrylonitrile and at least one water-soluble acrylic comonomer selected from the group consisting of 2-acrylamido-2-methylpropanesulfonic acid, acrylamide, acrylic acid, and methyl acrylate onto a polyhydroxy polymer substrate, thereby forming a water-insoluble graft copolymer, wherein the copolymerized acrylonitrile and acrylic comonomer comprise a synthetic copolymer moiety of said graft copolymer, and the mole percent ratio of acrylic comonomer:acrylonitrile in said synthetic copolymer moiety is from about 1:99 to about 85:15, and wherein the weight ratio of polyhydroxy polymer:synthetic copolymer moiety is in the range of 75:25 to 25:75;
b. saponifying said graft copolymer from step (a) to form a water-soluble saponified graft copolymer;
c. drying said water-soluble graft copolymer from step (b) to a moisture level in the range of about 1 to 15% water by weight, whereby said graft copolymer is rendered water insoluble;
d. and recovering said graft copolymer from step (c).

4,134,864

CATHODIC ELECTROCOATING RESIN SYSTEM COMPRISING THE REACTION PRODUCT OF A POLYEPOXIDE, A POLYAMINE AND A MONOCARBOXYLIC ACID

William J. Belanger, Louisville, Ky., assignor to Celanese Polymer Specialties Company, Louisville, Ky.

Division of Ser. No. 715,266, Aug. 18, 1976, abandoned. This application Jan. 23, 1978, Ser. No. 871,263

Int. Cl.[2] C08L 63/02

U.S. Cl. 260—18 EP 8 Claims

1. A resinous composition comprising the reaction product of

(A) a monocarboxylic acid which contains one carboxylic acid group and no other groups reactive with amine groups, said monocarboxylic acid having about 8 to 24 carbon atoms per molecule; and

(B) the reaction product of

(1) a polyepoxide resin derived from a dihydric phenol and an epihalohydrin, said polyepoxide resin having a 1,2-epoxide equivalent weight of about 400 to about 4000; and

(2) a polyamine having at least 2 amine nitrogen atoms per molecule, at least 3 amine hydrogen atoms per molecule and no other groups reactive with epoxide groups,

wherein (1) and (2) are reacted to form an epoxide-amine adduct, wherein (A) and (B) are reacted to form amide groups,

wherein about 1 mol of (2) is reacted with each epoxide equivalent of (1), about 2 to about 6 mols of (A) are reacted per each mol of (1) and wherein said resinous composition has a weight per active nitrogen of about 200 to about 600.

4,134,865

PROCESS FOR MAKING AQUEOUS CATIONIC COATING FROM AMINE-EPOXY ADDUCT, POLYAMIDE, AND SEMIBLOCKED POLYISOCYANATE, ACID SALT, AND PRODUCT

Akira Tominaga, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Jul. 22, 1977, Ser. No. 818,199

Int. Cl.[2] C08J 3/06; C08L 63/02; C25D 13/06

U.S. Cl. 260—18 PN 20 Claims

1. A process for preparing a cationic electrophoretic coating composition comprising the steps of:

(I) mixing or reacting

(1) a reaction product of an epoxy-amine adduct (A) and a partially blocked polyisocyanate (C) in the weight ratio of from 95 to 5 of (A) to from 5 to 95 of (C) and

(2) a reaction product of a polyamide (B) and a partially blocked polyisocyanate (C) in the weight ratio of from 95 to 5 of (B) to from 5 to 95 of (C),

said epoxy-amine adduct (A) being a reaction product prepared by reacting an epoxy resin with a basic amino compound having at least one basic amino group, said polyamide (B) being a polyamide having at least one basic amino group and said partially blocked polyisocyanate (C) being a polyisocyanate compound having at least one blocked isocyanate group in the molecule and an average of more than zero to not more than one free isocyanate group per molecule, and the weight ratio being from 90 to 10 of said reaction product of (A) and (C) to from 10 to 90 of said reaction product of (B) and (C) and

(II) dissolving or dispersing the resulting mixture or reaction product in an aqueous medium by neutralization with an acid.

4,134,866

AQUEOUS CATIONIC COATING FROM AMINE-EPOXY ADDUCT, POLYAMIDE, AND SEMI-BLOCKED POLYISOCYANATE, ACID SALT

Akira Tominaga, and Yasuyuki Hirata, both of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Filed Jun. 3, 1977, Ser. No. 803,246

Int. Cl.[2] C08J 3/06; C08L 63/02; C25D 13/06

U.S. Cl. 260—18 PN 21 Claims

1. A cationic electrophoretic coating composition comprising an aqueous medium and a resinous binder dissolved or dispersed therein, said resinous binder being an acid neutralized product said product being at least one selected from the group consisting of:

(1) a mixture of

(a) a reaction product of an epoxy-amine adduct (A) and a partially blocked polyisocyanate (C), in the weight ratio of from 90 to 15 of (A) to from 10 to 85 of (C), and

(b) a polyamide (B), the weight ratio of (a) to (b) being from 30 to 90 of the former as calculated by the amount of (A) to from 70 to 10 of the latter;

(2) a reaction product of

(a) a reaction product of an epoxy-amine adduct (A) and a partially blocked polyisocyanate (C), and

(b) a polyamide (B), the weight ratio of (A) to (C) in (a) and the weight ratio of (a) to (b) being the same as in (1);

(3) a mixture of

(c) a reaction product of a polyamide (B) and a partially blocked polyisocyanate (C), in the weight ratio of from 85 to 10 of (B) to from 15 to 90 of (C), and

(d) an epoxy-amine adduct (A), the weight ratio of (c) to (d) being from 70 to 10 of the former as calculated by the amount of (B) to from 30 to 90 of the latter; and

(4) a reaction product of

(c) a reaction product of a polyamide (B) and a partially blocked polyisocyanate (C), and

(d) an epoxy-amine adduct (A), the weight ratio of (B) to (C) in (c) and the weight ratio of (c) to (d) being the same as in (3), said epoxy-amine adduct (A) being a reaction product prepared by reacting an epoxy resin with a basic amino compound having at least one basic amino group, said polyamide (B) being a polyamide having at least one basic amino group and said partially blocked polyisocyanate (C) being a polyisocyanate compound having at least one blocked isocyanate group in the molecule and an average of more than zero to not more than one free isocyanate group per molecule.

4,134,867

FINISHING OF LEATHER WITH REACTION PRODUCTS OF EPOXIDES AND FATTY ACIDS

Rosemarie Töpfl, Dornach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 13, 1977, Ser. No. 796,636

Claims priority, application Switzerland, May 20, 1976, 6351/76

Int. Cl.[2] C08G 8/32, 59/00; C08L 61/26, 63/02

U.S. Cl. 260—21 22 Claims

1. A process for finishing leather, in which the leather is treated with a preparation which contains

(1) the reaction product of

(a) an epoxide containing at least two epoxide groups per molecule and having an epoxide content of 0.9 to 3.2 epoxide group equivalents per kg and

(b) a dimerised or trimerised fatty acid derived from a monomeric unsaturated fatty acid with 16 to 22 carbon atoms and

(2) an aminoplast precondensate containing alkyl ether groups; and the treated leather is dried at 50 to 120° C.

22. Preparation for carrying out the process according to claim 1 which contains

(1) a reaction product of

(a) an epoxide containing at least two epoxide groups per molecule and having an epoxide content of 0.9 to 3.2 epoxide group equivalents per kg and

(b) a dimerised or trimerised fatty acid which is derived from a monomeric unsaturated fatty acid with 16 to 22 carbon atoms and

(2) an aminoplast precondensate containing alkyl ether groups.

4,134,868

AROMATIC CARBOXYLIC ACID ESTER STABILIZERS FOR PVC RESINS

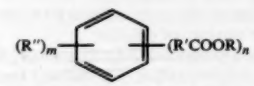
Motonobu Minagawa, Kosigaya; Tetsuo Sekiguchi, Hasuda, and Kouji Tsuruga, Ohmiya, all of Japan, assignors to Argus Chemical Corporation, Brooklyn, N.Y.

Filed Feb. 7, 1977, Ser. No. 766,073

Int. Cl.[2] C08K *5/12, 5/10*

U.S. Cl. 260—23 XA **15 Claims**

1. A stabilizer composition for enhancing the resistance to discoloration and loss of clarity of a vinyl chloride polymer when heated at 175° C., comprising (A) at least one metal salt of a non-nitrogenous monocarboxylic acid having 6 to 24 carbon atoms or a hydrocarbon-substituted phenol having 10 to 30 carbon atoms and (B) at least one aromatic carboxylic acid ester of a polyhydric alcohol having one to four carboxylic acid ester groups and at least two free alcoholic hydroxyl groups in a carboxylic acid polyhydric alcohol ester group, the ester being represented by the formula:



in which R is a hydroxyhydrocarbon group having 2 to 5 alcoholic hydroxyl groups and 3 to 10 carbon atoms; R′ is a bivalent linking group that can be a single bond, an alkylene group, an ether alkylene group, and a thioalkylene having 1 to 3 carbon atoms; R″ is an inert substituent that can be a halogen atom, a lower alkyl group, a lower alkoxyl group, a hydroxyalkyleneoxy group having 2 to 3 carbon atoms, a carboxyl group, a carboxylalkyl group, an amino group, and a carbamoyl group; m is an integer from zero to 5; n is an integer from 1 to 4, and the sum of m + n cannot exceed 6.

4,134,869

VINYL PYRIDINE LATEX STABILIZED WITH A RESORCINOL-FORMALDEHYDE NOVOLAK

Edward F. Kalafus, Akron, and Satish C. Sharma, Mogadore, both of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 703,154, Jul. 7, 1976, abandoned. This application Jan. 26, 1978, Ser. No. 872,842

Int. Cl.[2] C08L *9/00, 39/08*

U.S. Cl. 260—29.3 **1 Claim**

1. In a shear and storage stable composition, useful in the manufacture of an adhesive for adhering reinforcing cord to rubber, consisting essentially of an alkaline latex of from about 15 to 45% by weight of a mixture of a rubbery vinyl pyridine copolymer and a shear and storage stabilizer, the parts by weight ratio of said copolymer to said stabilizer being from about 100:1 to 100:10, said emulsion being free of stabilizer soap compositions added to the copolymer after the polymerization of the copolymer, wherein the improvement comprises the stabilizer comprising a substantially nonheat reactable acid catalyzed resorcinol formaldehyde resin.

4,134,870

ELASTOMERIC BLEND COMPOSITIONS OF A SULFONATED ELASTOMERIC POLYMER

Henry S. Makowski, Scotch Plains, and Charles P. O'Farrell, Clark, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Nov. 29, 1977, Ser. No. 855,770

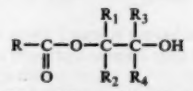
Int. Cl.[2] C08L *91/00*

U.S. Cl. 260—28.5 B **36 Claims**

1. A solid gel-free elastomeric blend composition consisting essentially of:

(a) a neutralized sulfonated elastomeric polymer having about 10 to about 50 meq. of metal sulfonate groups per 100 grams of said polymer, at least 90 percent of said metal sulfonate groups being neutralized with a metal counterion;

(b) about 2 to about 50 parts by weight of a hydroxyalkyl carboxylate ester per 100 parts of said neutralized sulfonated elastomeric polymer, said hydroxyalkyl carboxylate having the formula:



wherein R, R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, C_1 to C_{18} straight and branched chain acyclic, alicyclic, aryl, alkylaryl and/or arylalkyl groups and functional derivatives thereof and mixtures thereof; and

(c) about 2 to about 150 parts by weight of a non-polar wax per 100 parts of said neutralized sulfonated elastomeric polymer.

19. A solid gel-free composition consisting essentially of:

(a) a hydroxyalkyl sulfonated polymer; and

(b) about 2 to about 150 parts by weight of a non-polar wax per 100 parts of said hydroxyalkyl sulfonated polymer.

4,134,871

METHOD FOR REDUCING THE ADHESIVENESS OF HYDROGEL-LIKE POLYMER BY ADDING POLYETHYLENE GLYCOL

Hisao Otani; Akihisa Furuno, and Iwao Ohshima, all of Yokohama, Japan, assignors to Nitto Chemical Industry Co., Ltd. and Mitsubishi Rayon Co., Ltd., both of Tokyo, Japan

Filed Jan. 10, 1977, Ser. No. 758,275

Claims priority, application Japan, Jan. 9, 1976, 51-1599; Dec. 17, 1976, 51-150847

Int. Cl.[2] C08L *33/26*

U.S. Cl. 260—29.6 H **13 Claims**

1. A method for reducing the adhesiveness of a hydrogel of a water-soluble acrylamide polymer or copolymer, which comprises solution polymerizing an aqueous solution consisting essentially of at least about 18% by weight of acrylamide or a monomeric mixture consisting essentially of acrylamide and at least one comonomer selected from the group consisting of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, diethylaminoethyl methacrylate, dimethylaminohydroxypropyl acrylate, dimethylaminohydroxypropyl methacrylate, dimethylaminoethyl acrylamide, quaternary ammonium salts of these acrylates or methacrylates, acrylonitrile, methacrylonitrile, methyl acrylate, ethyl acrylate, methacrylamide, acrylic acid, methacrylic acid, and alkali metal salts thereof, and from about 0.05 to about 10% by weight, based on the weight of the aqueous solution of the monomer, of polyethylene glycol.

4,134,872

HETEROGENEOUS POLYMER PARTICLES COMPRISING AN INTERPOLYMER DOMAIN OF A MONOVINYLIDENE AROMATIC MONOMER, AN OPEN CHAIN ALIPHATIC CONJUGATED DIENE AND A MONOETHYLENICALLY UNSATURATED ACID

Do I. Lee, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 20, 1977, Ser. No. 799,073
Int. Cl.[2] C08L 33/00
U.S. Cl. 260—29.7 UP 14 Claims

1. An aqueous polymer latex,

(A) the dispersed polymer particles of which are heterogeneous and individually comprise per 100 parts by weight of the polymer particle:

(1) from about 50 to about 90 parts by weight of a soft interpolymer domain having a glass transition temperature equal to or less than about 25° C. and comprising, based upon the total soft interpolymer:

(a) from about 30 to about 69 weight percent of a monovinylidene aromatic monomer;

(b) from about 30 to about 60 weight percent of an open-chain aliphatic conjugated diene having from 4 to about 9 carbon atoms; and

(c) from about 1 to about 10 weight percent of a monoethylenically unsaturated carboxylic acid; and

(2) from about 10 to about 50 parts by weight of a hard resinous polymer domain having a glass transition temperature of at least about 85° C.; and

(B) which is prepared by emulsion polymerizing the monomers of the soft interpolymer domain in an aqueous medium comprising dispersed particles of the hard resinous polymer.

4,134,873

POLYURETHANE TOPCOAT COMPOSITION

Francis A. Diaz, Chicago, and Angelo F. Leo, Palatine, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 25, 1977, Ser. No. 790,419
Int. Cl.[2] C08G 18/42; C08L 75/06; C08K 3/22
U.S. Cl. 260—37 N 6 Claims

1. A polyurethane topcoat composition comprising a water-free organic solvent solution containing from 0.5–2.6 isocyanate equivalents of the biuret of 1,6-hexamethylene diisocyanate per hydroxyl equivalent of the polyesterification reaction product of the components set forth below having an acid number of less than 7:

Component	Parts by Weight	Permitted Variation
1,6-hexanediol	11.63	± 1.0
di-(2-hydroxyethyl) dimethylhydantoin	20.92	± 1.0
trimethylol propane	17.75	± 1.0
dimethyl terephthalate	28.10	± 1.0
adipic acid	21.15	± 1.0

4,134,874

PROCESSING AID FOR POLY(ARYLENE SULFIDE) RESINS

Donald G. Needham, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 19, 1977, Ser. No. 834,201
Int. Cl.[2] C08L 81/04
U.S. Cl. 260—37 SB 8 Claims

1. A method for improving processability of compositions of matter comprising normal polymer of arylene sulfide which comprises the addition of an amount of solid ethylene polymer in the range of about 0.1 to about 5 weight percent of the total composition said amount effective to improve processability of said composition.

4,134,875

POLYOLEFIN FILM FOR AGRICULTURAL USE

Graciano J. Tapia, Madrid, Spain, assignor to Alcudia Empresa Para la Industria Quimica, S.A., Madrid, Spain

Filed Mar. 17, 1978, Ser. No. 887,939
Int. Cl.[2] C08K 3/30
U.S. Cl. 260—42.46 14 Claims

1. Polymeric composition especially well suited for agricultural use comprising from about 80% or more polyolefin and from about 1% to about 15% by weight of an additive referred to as a basic metallic sulfate and having the formula

$$(SO_4)_4\, M_6^{III} \cdot M_2^{I}\, 12(OH)$$

wherein

M^{I} is a monovalent metal,

M^{III} is a trivalent metal,

said film having low thermal transmittance properties between 7 and 14 micron wavelengths and excellent light diffusion properties.

4,134,876

PHOSPHORUS AND LINEAR POLYESTER COMPOSITIONS AND PRODUCTS CONTAINING THEM

Patrick J. Horner, Welwyn Garden City, and Robert B. Rashbrook, Hatfield, both of, England, assignors to Imperial Chemical Industries Limited, London, England

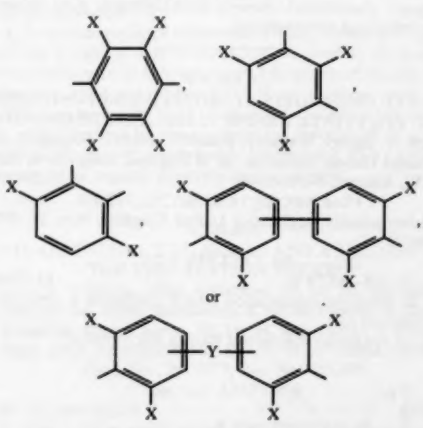
Filed Jan. 12, 1977, Ser. No. 758,833
Claims priority, application United Kingdom, Jan. 16, 1976, 1789/76
Int. Cl.[2] C08K 5/57; C07F 9/15
U.S. Cl. 260—45.7 P 8 Claims

1. Linear polyester compositions which contain as flame retardant sufficient of a hindered phenol phosphate to give a phosphorus content, based on the total composition, between 2% and 0.1% by weight,

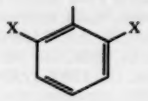
wherein said hindered phenol phosphate has the average empirical formula:

$$M_2PO_4(D\text{-}PO_4(M))_nM$$

where n is an integer from 1 to 10, D is



where Y is $—C(CH_3)_2—$, at least one third of the X groups are blocking groups, said blocking groups being alkyl groups with 1 to 5 carbon atoms and M is



and both X groups of M are blocking groups.

4,134,877

FLAME RETARDANT PHOSPHORAMIDATE COMPOSITIONS

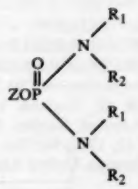
Albert W. Morgan, Collinsville, Ill.; Ignatius Schumacher, and William Vanderlinde, both of St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 599,568, Jul. 28, 1975, abandoned, which is a division of Ser. No. 459,257, Apr. 8, 1974, Pat. No. 4,062,909, which is a continuation-in-part of Ser. No. 276,810, Jul. 31, 1972, abandoned. This application May 9, 1977, Ser. No. 794,906

Int. Cl.[2] C08K *5/16*

U.S. Cl. 260—45.9 NP **15 Claims**

1. A composition comprising a polymer and an effective flame retarding amount of a compound of the formula



wherein

Z is selected from alkyl, benzyl, phenylethyl, naphthyl, phenyl, cresyl, ethylphenyl, isopropylphenyl, tert-butylphenyl, tert-amylphenyl, nonylphenyl, xylenyl, chlorophenyl, bromophenyl, iodophenyl, dichlorophenyl, trichlorophenyl, pentachlorophenyl, cumylphenyl, methoxyphenyl, ethoxyphenyl, phenoxyphenyl, nitrophenyl, trifluoromethylphenyl, benzylphenyl, vanillyl, chlorodimethylphenyl, chloronaphthyl, chloronitrophenyl, cyanophenyl, di-tert-butylphenyl, dimethoxyphenyl, fluorophenyl, biphenyl, and isodecylphenyl; and

R_1 and R_2 are individually selected from alkyl, cycloalkyl, benzyl, phenylethyl, phenyl, methylphenyl, diethylphenyl naphthyl and chlorophenyl.

4,134,878

NOVEL ORGANOTIN STABILIZER COMPOSITIONS AND POLYVINYL RESINS STABILIZED THEREWITH

Joseph W. Burley, Wallasey; Ronald E. Hutton, Southport, and Vincent Oakes, Eccleston, all of England, assignors to Akzo N.V., Arnhem, Netherlands

Filed Nov. 15, 1976, Ser. No. 742,071

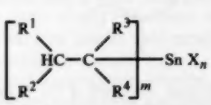
Claims priority, application United Kingdom, Nov. 25, 1975, 48390/75

Int. Cl.[2] C08K *5/58*

U.S. Cl. 260—45.75 S **11 Claims**

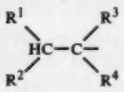
1. A stabilizer composition which comprises a synergistic combination of:

(a) an organotin compound having the formula:



wherein m + n = 4 and m is either 1 or 2, R^1, R^2, R^3 and R^4 are each independently a hydrogen atom, or an alkyl or substituted alkyl group having 1 to 18 carbon atoms with the proviso that at least one of R^1 and R^2 contains adjacent to the group HC— a carbonyl group which forms a part of an acid group, ester group, acid halide group, ketone group or aldehyde group; X is a $-S(CH_2)_y-COOR^5$ or $-S(CH_2)_y-OCOR^5$ wherein y is 1 or 2, or a $-SR^5$, $-OCOR^5$ or $-OCOCH=CHCOOR^5$, R^5 having 1 to 18 carbon atoms; and

(b) an organotin sulfide having the formula $(R\,Sn\,S_{1.5})_n$ or $R_2Sn\,S$, wherein n is 2 to 10 and R is an alkyl group having 1 to 18 carbon atoms or the group:



wherein R^1, R^2, R^3 and R^4 are as above defined under (a).

5. A polyvinyl resin stabilized with the synergistic stabilizer composition of claim 1.

4,134,879

THIOETHER-CONTAINING PHENOLIC ANTIOXIDANT STABILIZED POLYMERS

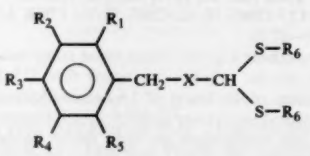
Andreas Schmidt, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 5, 1976, Ser. No. 739,179

Int. Cl.[2] C08K *5/13*

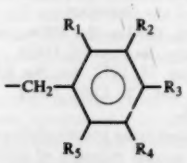
U.S. Cl. 260—45.85 P **10 Claims**

1. A composition of matter comprising a poly mono-olefin and 0.005 to 5% by weight of a compound of the formula



in which R_1 and R_5 independently of one another are hydrogen or lower alkyl, one of R_2 and R_3 is hydroxyl and the other is alkyl, cycloalkyl or aralkyl, R_4 is hydrogen or, if R_3 is hydroxyl, also is alkyl, cycloalkyl or aralkyl, x is a group.

wherein R_8 is alkyl, aralkyl or phenyl and R_9 is alkyl, aralkyl, phenyl of the group



or R_8 and R_9 together are alkylene and R_6 is hydroxycarbonylalkyl, alkoxycarbonylalkyl, cycloalkoxycarbonylalkyl, aralkoxycarbonylalkyl or aryloxycarbonylalkyl.

4,134,880

PROCESS FOR PRODUCING AN AROMATIC URETHANE FROM NITRO COMPOUNDS, HYDROXYL COMPOUNDS AND CARBON MONOXIDE USING METAL-LEWIS ACID-AMMONIA CATALYST SYSTEMS

Katsuharu Miyata; Yutaka Hirai, and Hiroshi Yoshida, all of Omuta, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Jan. 19, 1978, Ser. No. 870,890
Int. Cl.[2] C08L *79/00*
U.S. Cl. 560—24 8 Claims

1. A process for producing an aromatic urethane by reacting an aromatic nitro compound, a hydroxyl group-containing organic compound selected from the group consisting of monohydric alcohols, polyhydric alcohols, monohydric phenols and polyhydric phenols, characterized in that the reaction is conducted in the presence of a catalytic system composed of (1) a member selected from the group consisting of palladium, ruthenium and rhodium and halides, cyanides, thiocyanides, isocyanides, oxides, sulfates, nitrates and carbonyl compounds thereof, (2) a Lewis acid, and (3) ammonia under an initial pressure of carbon monoxide of 10–500 kg/cm^2 and at a temperature of 80°–260° C.

4,134,881

HIGH PERFORMANCE POLYESTER RESIN

Robert W. Cuddihy, Fridley, Minn., and Daniel S. Knoebel, Glenwood City, Wis., assignors to Cargill, Incorporated, Minneapolis, Minn.

Filed Aug. 5, 1977, Ser. No. 822,100
Int. Cl.[2] C08L *67/06*
U.S. Cl. 528—299 3 Claims

1. An unsaturated polyester polymer for use in polyester resins, said polyester polymer consisting essentially of the ester condensation product of propylene glycol, an aliphatic acid component and an aromatic acid component, the molar ratio of said aromatic acid component to said aliphatic acid component being in the range of from about 35/65 to about 37/68, said aliphatic acid component consisting essentially of a mixture of adipic and fumaric acids in which the molar ratio of said adipic acid component to said fumaric acid component is in the range of from about 20/45 to about 20,48, and said aromatic component consisting essentially of a mixture of isophthalic acid and halogenated phthalic anhydride, the proportion of said halogenated phthalic anhydride component being selected to provide from about 5 to about 7 percent by weight of halogen in said polyester polymer, a solution of said polyester in styrene with a polyester to styrene weight ratio of from about 63/37 to about 65/35 being capable of being cured under addition polymerization conditions to provide a cured resin having a Barcol Hardness of at least 40, a heat deflection temperature of at least about 90° C., a flexural strength of at least 20,000 psi, a flexural modulus of at least 5.0 × 10^5 psi, a tensile strength of at least 10,000 psi, a tensile modulus of at least 5.0 × 10^5 psi, and a tensile elongation of at least 3.0 percent.

4,134,882

POLY(ETHYLENE TEREPHTHALATE)FILAMENTS

Hans, R. E. Frankfort, and Benjamin H. Knox, both of Kinston, N.C., assignors to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 694,919, Jun. 11, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,977
Int. Cl.[2] C08G *63/70, 63/18*
U.S. Cl. 528—309 57 Claims

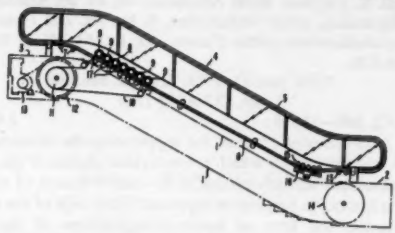
1. Poly(ethylene terephthalate) filaments of enhanced dyeability and low shrinkage, characterized by a long-period spacing of more than 300 A and by a differential birefringence ($\Delta_{95.5}$) between the surface and the core of the filament of less than about 0.0055 + 0.0014 δ_{20}, where δ_{20} is the stress measured at 20% extension, and is at least about 1.6 gpd.

4,134,883

ABRASION RESISTANT POLYURETHANE ARTICLE HAVING A HIGH ROLLING COEFFICIENT OF FRICTION

Morris A. Mendelsohn, Wilkins Township, Allegheny County, and Carl P. Izzo, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1977, Ser. No. 827,033
Int. Cl.[2] C08G *18/48, 18/32*
U.S. Cl. 528—63 11 Claims



1. An abrasion resistant, traction article, comprising a cured, high traction, extended polyurethane composition consisting essentially of the cured reaction product of:

(1) 100 parts of an isocyanate terminated prepolymer consisting essentially of the reaction product of:

(A) 100 parts of a diol admixture consisting of about 60 weight percent to about 85 weight percent of polyoxytetramethlenediol and about 15 weight percent to about 40 weight percent of polyoxyisopropylenediol, and

(B) about 14 parts to about 17 parts of toluene diisocyanate, and

(2) 8.0 parts to 10.0 parts of methylene bis(O-chloroaniline acting as a chain extender.

4,134,884

CURABLE RESINOUS COMPOSITION COMPRISING UNSATURATED ALKYD AND UNSATURATED CYCLOACETAL

Eiichiro Takiyama, Kamakura; Yasuji Komatsu, Hoya, and Hiroshi Danbara, Takasaki, all of Japan, assignors to Showa Highpolymer Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 757,283
Claims priority, application Japan, Dec. 29, 1975, 51-156038
Int. Cl.[2] C08L *67/06*
U.S. Cl. 260—861 7 Claims

1. A curable resinous composition which consists of (I) 100 parts by weight of unsaturated alkyd obtained by the condensation reaction of an α,β-unsaturated polycarboxylic acid or its anhydride with polyhydric alcohol or alkylene oxide, (II) 1–200 parts by weight of an unsaturated cycloacetal cross-linking agent obtained by the condensation reaction of an unsaturated aldehyde with a polyhydric alcohol and (III) a catalytic amount of an organic peroxide curing catalyst.

4,134,885

ANTI-ANTIHEMOCYTIC SERUM AND A METHOD FOR THE PREPARATION THEREOF

Juozas B. Valjukas, ulitsa Antakalne, 65, kv. 50; Marionas A. Babyanskas, ulitsa Melnikaites, 8, kv. 30; Pyatras A. Zayanchkanskas, ulitsa Cherno, 10, kv. 54, and Yanina I. Zhukauskene, ulitsa Arkhitektu, 168, kv. 18, all of Vilnjus, U.S.S.R.

Filed Dec. 29, 1977, Ser. No. 865,489
Int. Cl.[2] A23J *1/06*
U.S. Cl. 260—112 B 2 Claims

1. Anti-antihemocytic serum comprising water-soluble proteins in a physiological solution isolated from cells of the bodies of insects immunized by a single injection in a dose of 0.25 μl to 2.0 μl for every insect with the anti-hemocytic serum

produced from the plasma of the blood of an animal immunized with a suspension of hemocytes from cells of the body of the given species of insects; the titre of hemocytoagglutinins of the anti-antihemocytic serum is 1:256 to 1:1024.

4,134,886

ANTI-HEMOCYTIC SERUM AND A METHOD FOR THE PREPARATION THEREOF

Juozas B. Valjukas, ulitsa Antakalne, 65, kv. 50; Marionas A. Babyanskas, ulitsa Melnikaites, 8, kv. 30, and Pyatras A. Zayanchkauskas, ulitsa Cherno, 10, kv. 54, all of Vilnjus, U.S.S.R.

Filed Jan. 11, 1978, Ser. No. 868,516

Int. Cl.[2] A23J *1/06*

U.S. Cl. 260—112 B **3 Claims**

1. Anti-hemocytic serum for suppressing the immunologic mechanism of insects which is inactivated plasma of the blood of immunized animals produced by immunization of animals with a hemocyte suspension separated from cells of the bodies of insects; the titre of hemocytoagglutinins of the anti-hemocytic serum is 1:256 to 1:2048.

4,134,887

PHENYL-AZO-PHENYL DYESTUFFS

Hermann Fuchs, Kelkheim; Gustav Kapaun, Neuenhain, and Fritz Meininger, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

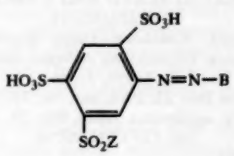
Division of Ser. No. 514,994, Oct. 15, 1974, Pat. No. 4,066,638. This application Nov. 16, 1977, Ser. No. 852,043

Claims priority, application Fed. Rep. of Germany, Oct. 17, 1973, 2351970

Int. Cl.[2] C09B *29/08*; D06P *1/384, 3/10, 3/66*

U.S. Cl. 260—205 **2 Claims**

1. A compound which, in the form of the free acid, corresponds to the formula



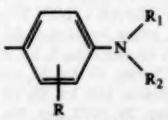
in which Z is

$$-CH_2-CH_2-A$$

or

$$-CH=CH_2$$

in which A is N, N-dialkylamino with 1 to 4 carbon atoms in each alkyl moiety or is chlorine, bromine, sulfato, thiosulfato, phosphato or acetoxy, B is



wherein R is hydrogen, alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbon atoms, acetylamino, chlorine or bromine, R_1 is hydrogen or alkyl with 1 to 4 carbon atoms, unsubstituted or substituted by hydroxy or cyano, and R_2 is lower alkyl with 1 to 4 carbon atoms unsubstituted or substituted by hydroxy or cyano, or is acetyl or benzoyl.

4,134,888

CHOLESTERYL CARBONATES AND CARBAMATES OF AZO DYES

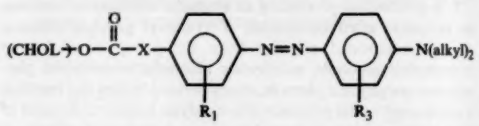
Allen Bloom, East Windsor, and Ling K. Hung, Edison, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 642,728, Dec. 22, 1975, Pat. No. 4,032,470. This application Feb. 28, 1977, Ser. No. 772,997

Int. Cl.[2] C07C *107/06*; C09B *43/18*

U.S. Cl. 260—207.1 **2 Claims**

1. A compound of the formula



wherein (CHOL)– represents a cholesteryl radical, X can be O or NH, R_1 can be hydrogen, hydroxy, methyl, fluoro or chloro; and R_3 can be hydrogen, methyl, fluoro or chloro.

4,134,889

MANUFACTURE OF GLYCINONITRILES

Harry Distler, Bobenheim; Erwin Hartert, and Helmut Schlecht, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 2, 1977, Ser. No. 792,727

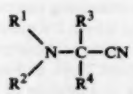
Claims priority, application Fed. Rep. of Germany, May 8, 1976, 2620445; May 11, 1976, 2620743

The portion of the term of this patent subsequent to May 10, 1994, has been disclaimed.

Int. Cl.[2] C07C *120/00*

U.S. Cl. 260—239 B **13 Claims**

1. A process for the manufacture of a glycinonitrile of the formula



I

wherein:

R^1, R^2, R^3 and R^4 may be identical or different unsubstituted radicals and each is alkyl of 1 to 20 carbon atoms, alkenyl of 2 to 20 carbon atoms, cycloalkyl of 5 to 8 carbon atoms or aralkyl of 7 to 12 carbon atoms;

R^3 and R^4 may also each be phenyl or naphthyl;

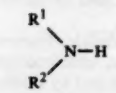
R^2 or R^4 may in addition each be hydrogen; R^1 and R^2 together with the adjacent nitrogen may also represent a 5-membered or 6-membered heterocyclic radical which may contain a further nitrogen or oxygen atom in the ring;

R^3 and R^4 each may also simultaneously be hydrogen, provided that R^1 and R^2 each is a cylcoalkyl or an aralkyl radical or R^1 and R^2 together with the adjacent nitrogen represent a heterocyclic radical;

and wherein each of the above radicals may in addition be substituted by alkyl or alkoxy, each of 1 to 4 carbon atoms, or by hydroxyl, nitro or cyano,

which process comprises:

reacting an amine of the formula



II

where R^1 and R^2 have the above meaning, with a carbonyl compound of the formula

III

where R^3 and R^4 have above meaning, and with hydrogen cyanide in the presence of water for from 0.1 to 4 hours at from 0 to 80° C, the concentration of hydrogen cyanide during the reaction not exceeding 0.1 percent by weight, based on the reaction mixture.

4,134,890

2-ARYL-2-[ω-(DIISOPROPYLAMINO)ALKYL]-ω-(AZABICYCLOALKYL)ALKANAMIDES

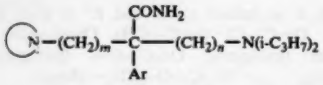
Peter K. Yonan, Morton Grove, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Mar. 11, 1977, Ser. No. 776,561

Int. Cl.[2] **C07D** *295/12, 221/22, 487/04;* **A61K** *31/395*

U.S. Cl. 260—239 BA **7 Claims**

1. A compound having the formula



and the non-toxic pharmacologically acceptable acid addition salts thereof; where

is 3-azabicyclo[3.2.2]non-3-yl, or 2-azabicyclo[2.2.2]oct-2-yl,[or pyrrolo[1,2-a]pyrazin-2-yl;] Ar is phenyl or phenyl substituted with 1 or 2 halogen; and m and n are each integers from 2 to 4 inclusive.

4,134,891

14-FUNCTIONALIZED 8,19-OXIDO STEROIDS AND PROCESSES FOR PREPARATION THEREOF

Gunther Kruger, St. Laurent, Canada, assignor to Steele Chemicals Co. Ltd., Quebec, Canada

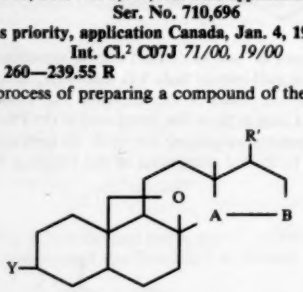
Continuation-in-part of Ser. No. 497,729, Aug. 15, 1974, abandoned, which is a continuation-in-part of Ser. No. 215,669, Jan. 5, 1972, Pat. No. 3,849,402. This application Aug. 2, 1976, Ser. No. 710,696

Claims priority, application Canada, Jan. 4, 1972, 131672

Int. Cl.[2] **C07J** *71/00, 19/00*

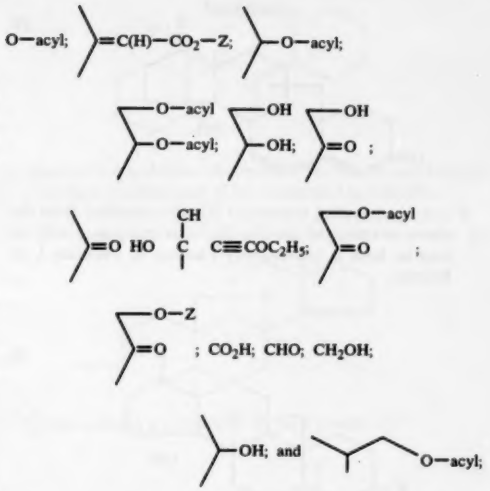
U.S. Cl. 260—239.55 R **89 Claims**

1. A process of preparing a compound of the formula



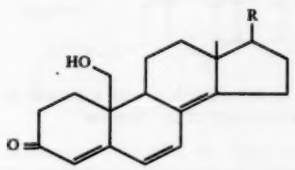
(Ia)

wherein Y is selected from the group consisting of α-OH, β-OH, H, =O, O—acyl and O—tetrahydropyranyl; A and B represent 14- and 15- carbon atoms, respectively, which are either linked by a double bond or an α-oxido bridge or have a hydroxy group, or acetoxy group or halogen atom in the 14β- or 14α-positions, in which case B is a methylene group; wherein the dotted lines represent optional double bonds in the 4(5) and/or 6(7) positions, and R′ is selected from the group consisting of



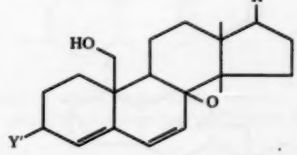
wherein Z is tetrahydropyranyl, lower alkyl, or a substituted methyl, wherein the substituent is selected from the group consisting of phenyl, halogen, methoxy, CH_2=CH and HC≡C; acyl represents a group selected from those consisting of formyl, acetyl, tri-lower-alkyl acetyls, wherein the lower alkyl group is methyl or ethyl, monohalo acetyls and trihalo acetyls, and in the case of AB-ring being a saturated 8,19-oxido 5α- and 5β-androst-14-enes and AB-ring saturated 21-unsubstituted 8,19-oxido 5α-pregn-14-enes, Y is H only, which process is selected from the group consisting of:

(a) treating a compound of the Formula II

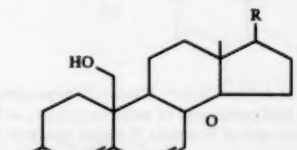


(II)

wherein R is as defined above, with a peracid, to form a mixture of compounds of the Formulae IIIa, IIIb or I, where Y′ is O= and R is as defined above:

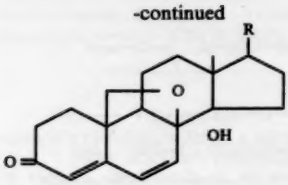


(IIIa)



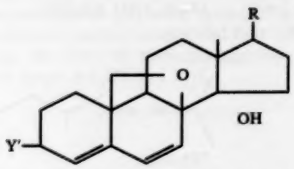
(IIIb)

-continued



(I)

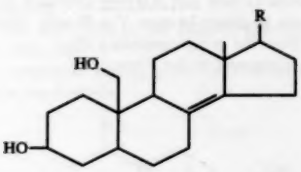
if desired separating compound IIIa thus obtained from the above mixture and treating the latter compound with an acid to form a 14β-hydroxy-3-ketone of Formula I, as follows:



(I)

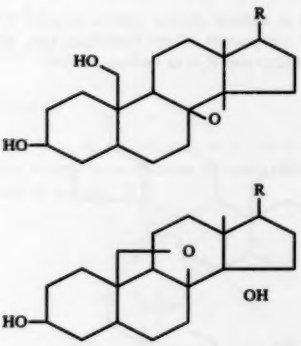
where Y' is O=; similarly separating the α-epoxide IIIb and treating it with an acid to form a 14α-hydroxy-3-ketone of the above formula I;

(b) treating a compound of the Formula IV



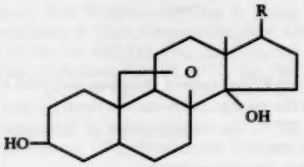
(IV)

wherein R is as defined above, with a peracid to form a mixture of compounds of the formulae



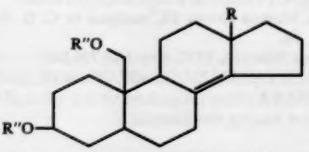
(V)

in which R is as defined above; if desired, separating from said mixture said compound of said Formula V, and treating said compound of Formula V under catalytic hydrogenation conditions or with an acid to form a compound of the Formula I as follows:



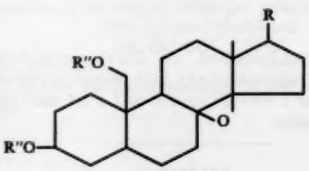
(I)

(c) epoxidizing a compound of the formula

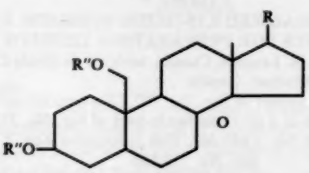


(VI)

wherein R is as defined above and R" is acyl, preferably, O=C—H, O=C—Cl, O=C—CH_3, O=C—CH_2 halogen, O=C—CH (halogen)$_2$, O=C—C— (halogen)$_3$, O=C—C(CH_3)$_3$, O=C—O—CH_2—phenyl, O=C—O—C(CH_3)$_3$, into a mixture of compounds of the Formulae VII and VIII

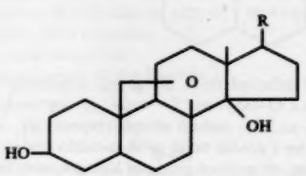


(VII)



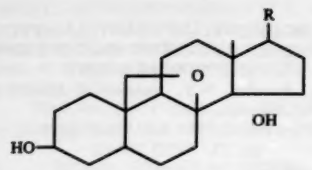
(VIII)

in which R' and R" are as defined above, separating from said mixture said compounds VII and VIII, and, in the case of the compound of the Formula VII, treating the latter with a base to form the compound of the Formula V and subsequently subjecting the latter to hydrogenation conditions to form a compound of the Formula I as follows:



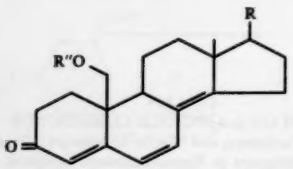
;

in the case of the compound of the Formula VIII, subjecting the latter to successive base-acid treatment to yield a compound of formula:



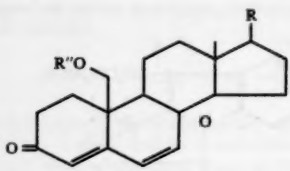
(I)

(d) epoxidizing a compound of the Formula IX



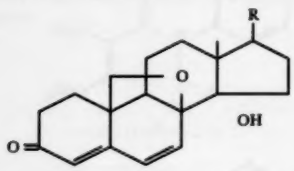
(IX)

wherein R" is as defined above to form a compound of the Formula X

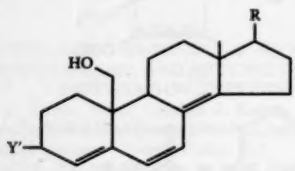


(X)

wherein R and R" are as defined above; and treating the latter compound with a base and then with an acid to form a compound of the Formula I, as follows:

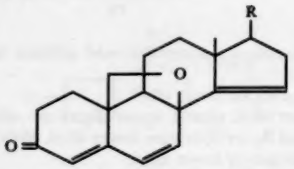


(e) oxidizing a compound of the Formula XI



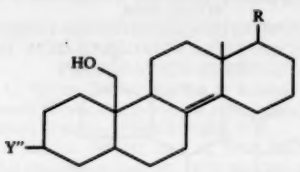
(XI)

wherein R is as defined above and Y' is OH or O=, to form a compound of the Formula I as follows



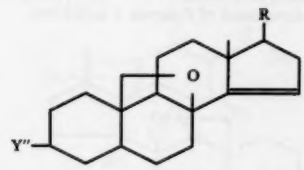
and

(f) oxidizing a compound of the Formula XII



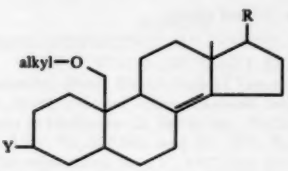
(XII)

wherein R is as defined above and Y" is OH, O—acyl or =O to form a compound of the Formula I as follows:



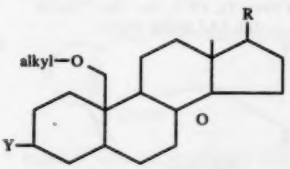
(I)

(g) epoxidizing a compound of the Formula XV



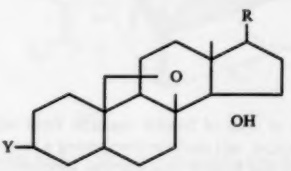
(XV)

wherein Y and R are as defined above, and alkyl is preferably tetrahydropyranyl, benzyl, allyl and propargyl, into a compound of Formula XVI



(XVI)

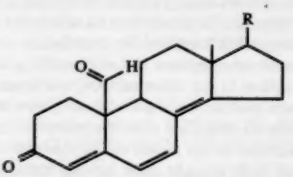
and subsequently subjecting the latter to hydrogenation conditions to form a compound of Formula I as follows:



(I);

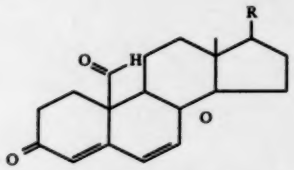
wherein Y and R are as defined above,

(h) epoxidizing a compound of Formula XVII



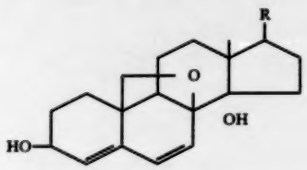
(XVII)

wherein R is as defined above, into a compound of Formula XVIII



(XVIII)

and subsequently subjecting the latter to reducing conditions to form a compound of Formula I as follows:



(I)

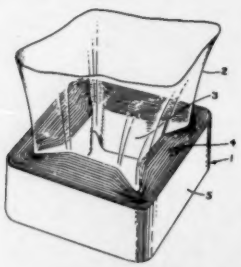
wherein R is as defined above.

4,134,892

PACKING MATERIAL

Sture Sundberg, Malmo, Sweden, assignor to Aktiebolaget Platmanufaktur, Malmo, Sweden

Filed Mar. 11, 1977, Ser. No. 776,652
Int. Cl.[2] B65D *85/02*
U.S. Cl. 206—303 **3 Claims**



1. A package of hose of flexible material from which the hose can be removed, said package comprising a succession of folded sections of said flexible hose material superposed on one another to form a package having an inner section with an inner surface and an outer section with an outer surface, said folded sections between the inner and outer sections having the same axial length, said sections gradually increasing in circumferential extent from said inner surface to said outer surface, each section having a foil length of the same initial circumferential extent whereby the sections are progressively expanded from the inner surface to the outer surface, said inner surface being of star shape and having a plurality of points such that the folded sections are stretched over the points of the star to lie against one another at the points of the star and the outer surface is formed with straight sides having corners at said points of the star.

4,134,893

COMPOUND 2[5-(4-CHLOROPHENYL)-2-FURANYL]-5-MERCAPTO-1,3,4-OXADIAZOLE POTASSIUM SALT IS USEFUL AS AN ANTIFUNGAL AGENT

Chia-Nien Yu, Norwich, N.Y., assignor to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Feb. 2, 1978, Ser. No. 874,374
Int. Cl.[2] C07D *271/10*
U.S. Cl. 260—307 G **1 Claim**

1. The compound 2-[5-(4-chlorophenyl)-2-furanyl]-5-mercapto-1,3,4-oxadiazole potassium salt.

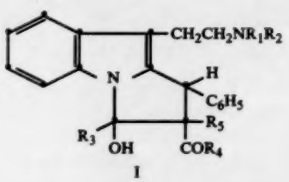
4,134,894

PYRROLO[1,2-A]INDOLE COMPOUNDS

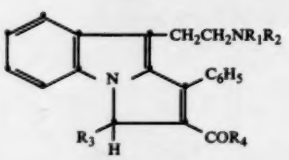
Harold Zinnes, Rockaway, and Martin L. Schwartz, Parsippany, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed May 4, 1978, Ser. No. 902,583
Int. Cl.[2] C07D *487/04*
U.S. Cl. 260—326.25 **18 Claims**

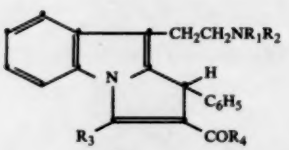
1. Pyrrolo[1,2-a]indole compounds having the formulas



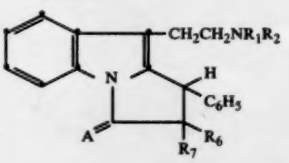
I



II



III



IV

and pharmaceutically acceptable acid addition salts thereof, where

R_1, R_2 and R_3 are lower alkyl;

R_4 is lower alkyl, phenyl, lower alkoxy or $—N(R_8)R_9$ in which R_8 and R_9 are hydrogen, lower alkyl, phenyl or benzyl;

R_5 is hydrogen or lower alkyl;

A is O or NH; and

R_6 and R_7 are lower alkyl, phenyl or carbo(lower)alkoxy.

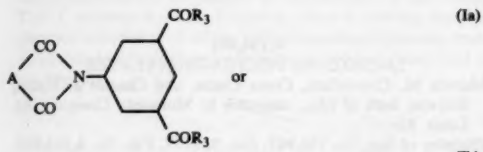
4,134,895

IMIDYL-BENZENEDICARBOXYLIC ACID DERIVATIVES

Martin Roth, Basel; Vratislav Kvita, Muttenz, and Gerd Greber, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

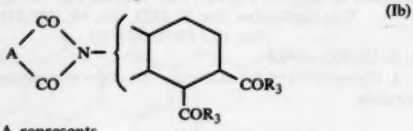
Filed Jun. 15, 1976, Ser. No. 696,347
Claims priority, application Switzerland, Jun. 18, 1975, 7952/75
Int. Cl.[2] C07D *207/44, 403/02*
U.S. Cl. 260—326.41 7 Claims

1. A compound of the formula



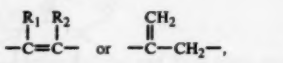
(Ia)

or



(Ib)

wherein A represents



R_1 and R_2 independently of one another denote hydrogen, chlorine or bromine, and R_3 denotes chlorine, hydroxyl, phenoxy; phenoxy substituted by one or two nitro groups, by one alkyl of 1 to 2 carbon atoms, by one alkoxy of 1 to 2 carbon atoms or by two to five halogen atoms; alkoxy with 1 to 18 carbon atoms or an $—O^-M^+$ group, in which M^+ represents an alkali metal cation, a trialkylammonium cation with 3 to 24 carbon atoms or a quaternary ammonium cation.

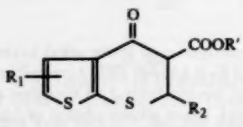
4,134,896

5,6-DIHYDRO-4-OXO-4H-THIENO[2,3-B]THIOPYRAN-5-CARBOXAMIDES, AND PROCESS FOR THE PREPARATION THEREOF

Jagadish C. Sircar, Dover; Stephen J. Kesten, Morris Plains, and Harold Zinnes, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 749,507, Dec. 10, 1976, Pat. No. 4,092,325.
This application Dec. 5, 1977, Ser. No. 857,336
Int. Cl.[2] C07D *333/24, 333/38*
U.S. Cl. 260—332.2 A 2 Claims

1. A compound of the formula IV:



wherein R_1 is hydrogen, halogen or lower alkyl; R_2 is hydrogen, lower alkyl or aryl; and R′ is lower alkyl.

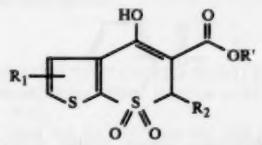
4,134,897

AMIDES OF 4-HYDROXY-6H-THIENO[2,3-b]THIOPYRAN-5-CARBOXYLIC ACID-7,7-DIOXIDE AND PROCESS FOR THE PREPARATION THEREOF

Jagadish C. Sircar, Dover; Stephen J. Kesten, Morris Plains, and Harold Zinnes, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 749,491, Dec. 10, 1976, Pat. No. 4,082,757.
This application Dec. 27, 1977, Ser. No. 864,982
Int. Cl.[2] C07D *333/48*
U.S. Cl. 260—332.1 2 Claims

1. A compound of the Formula III:



wherein R_1 is hydrogen, halogen or lower alkyl; R_2 is hydrogen, lower alkyl or aryl; and R′ is lower alkyl.

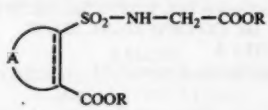
4,134,898

N-CARBALKOXYMETHYLSULFAMOYL THIOPHENE CARBOXYLIC ACID ALKYL ESTERS

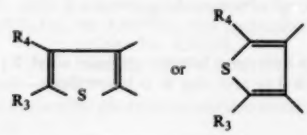
Otto Hromatka; Dieter Binder, both of Vienna, Austria; Rudolf Pfister, Basel, and Paul Zeller, Allschwil, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 606,563, Aug. 21, 1975, Pat. No. 4,076,709.
This application Nov. 17, 1977, Ser. No. 852,385
Claims priority, application Switzerland, Aug. 26, 1974, 11582/74; Sep. 9, 1974, 12157/74; Jul. 9, 1975, 8963/75
Int. Cl.[2] C07C *333/18, 333/24*
U.S. Cl. 260—332.2 C 2 Claims

1. A compound of the formula



wherein A together with the two carbon atoms to which it is attached forms the group



(a) (b)

R represents a lower alkyl group; and R_3 and R_4 each represent a hydrogen atom or a lower alkyl group.

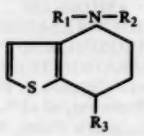
4,134,899

NOVEL 4,5,6,7-TETRAHYDRO-7-OXY(OXY)BENZO[b]THIOPHEN-4-AMINE COMPOUNDS USEFUL AS ANIMAL GROWTH REGULANTS

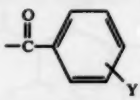
Goro Asato, Titusville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 628,716, Nov. 4, 1975, abandoned. This application Jul. 18, 1977, Ser. No. 816,429
Int. Cl.[2] C07D *333/24, 333/16;* A01N *9/00*
U.S. Cl. 260—332.2 R 9 Claims

1. A compound of the formula:



wherein R_1 is hydrogen; R_2 is selected from the group consisting of hydrogen, alkanoyl having up to 6 carbon atoms, halo-substituted alkanoyl having up to 6 carbon atoms and a moiety of the formula:



wherein Y is hydrogen, chloro, methyl, methoxy, nitro or 3,4-dichloro; R_3 is oxo or hydroxy; the optical isomers and racemic mixtures thereof; the cis and trans isomers thereof when R_3 is hydroxy; and the hydrochloric, hydrobromic and hydriodic acid salts thereof when R_1 and R_2 are both hydrogen.

4,134,900

5,6-DIHYDRO-4-OXO-4H-THIENO[2,3-b]THIOPYRAN-5-CARBOXAMIDES, AND PROCESS FOR THE PREPARATION THEREOF

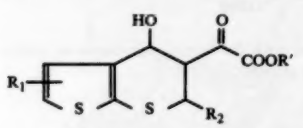
Jagadish C. Sircar, Dover; Stephen J. Kesten, Morris Plains, and Harold Zinnes, Rockaway, all of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Division of Ser. No. 749,507, Dec. 10, 1976, Pat. No. 4,092,325. This application Dec. 5, 1977, Ser. No. 857,337

Int. Cl.[2] C07D *333/24, 333/38*

U.S. Cl. 260—332.2 A **2 Claims**

1. A compound of the Formula III:



wherein R_1 is hydrogen, halogen or lower alkyl; R_2 is hydrogen, lower alkyl or aryl; and R' is lower alkyl.

4,134,901

FLAVORING SUBSTANCES

Godefridus A. M. van den Ouweland, Zevenaar, and Henricus G. Peer, Oosterbeek, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

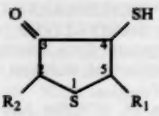
Continuation of Ser. No. 599,503, Jul. 28, 1975, abandoned, which is a continuation of Ser. No. 471,424, May 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 838,053, Jun. 27, 1969, Pat. No. 4,020,170. This application Aug. 30, 1976, Ser. No. 718,999

Claims priority, application United Kingdom, Jul. 1, 1968, 31378/68

Int. Cl.[2] C07D *333/16;* B02B *3/12*

U.S. Cl. 260—332.3 R **4 Claims**

1. A compound of the formula:



wherein R_1 and R_2 are selected from the group consisting of hydrogen, methyl and ethyl, wherein R_1 and R_2 cannot both be hydrogen simultaneously.

4,134,902

1,4-DIOXANE POLYCARBOXYLATES

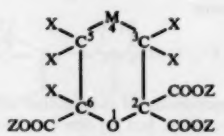
Marvin M. Crutchfield, Creve Coeur, and Charles J. Upton, Ballwin, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 756,947, Jan. 5, 1977, Pat. No. 4,102,903. This application Dec. 5, 1977, Ser. No. 857,071

Int. Cl.[2] C07D *319/10*

U.S. Cl. 260—340.6 **8 Claims**

1. Compounds of the molecular structure represented by the formula:



wherein M is 0, X is selected from the group consisting of H, lower alkyl (C_1 to C_4), or COOZ, Z represents H, R or a salt forming ion from the group alkali metal, ammonium, or trialkanolammonium, and R is an alkyl group (branched or straight chain) having up to about C_{20} in the chain.

4,134,903

ANTHRACYCLINE ETHERS AND THEIR PREPARATION

Paolo Masi; Antonino Suarato; Pietro Giardino; Luigi Bernardi, all of Milan, and Federico Arcamone, Nerviano (Milan), all of Italy, assignors to Societa Farmaceutici Italia S.p.A., Milan, Italy

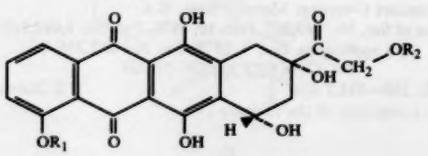
Division of Ser. No. 817,972, Jul. 22, 1977, Pat. No. 4,088,569. This application Mar. 17, 1978, Ser. No. 887,782

Claims priority, application United Kingdom, Aug. 7, 1976, 32992/76

Int. Cl.[2] C07C *49/72, 49/73, 97/26;* C09B *1/30*

U.S. Cl. 260—365 **12 Claims**

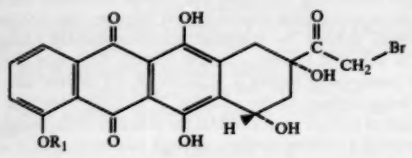
1. A compound of the formula:



II,

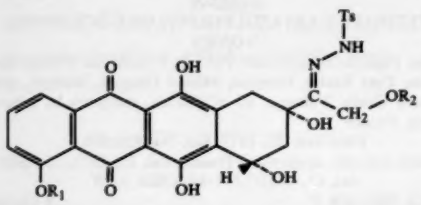
wherein R_1 is hydrogen or a lower alkyl having from 1 to 4 carbon atoms and R_2 is a lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, phenyl, lower alkyl phenyl, lower alkoxy phenyl or halophenyl.

10. A process for preparing a compound as claimed in claim 1, said process comprising reacting a 14-bromodaunomycinone of the formula:



III

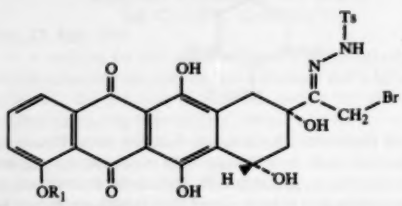
wherein R_1 is as defined in claim 1 with tosylhydrazine to form a 13-tosylhydrazone, dissolving said 13-tosylhydrazone at a temperature between 0° and 50° C. in an alcohol of the formula R_2OH, wherein R_2 is as defined in claim 1, treating the thus obtained solution with silver trifluoromethansulphonate or an alkali metal carbonate or hydroxide, to obtain a compound of the formula:



V

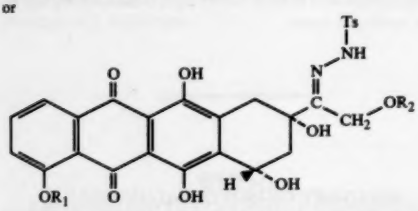
wherein R_1 and R_2 are as defined above and Ts is tosyl, and refluxing said compound (V) in acetone, in the presence of p-toluensulphonic acid, to form the compound of claim 1.

12. A compound of the formula:



IV

or



V

wherein Ts is tosyl, R_1 is hydrogen or a lower alkyl having from 1 to 4 carbon atoms and R_2 is a lower alkyl having from 1 to 4 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, phenyl, lower alkyl phenyl, lower alkoxy phenyl or halophenyl.

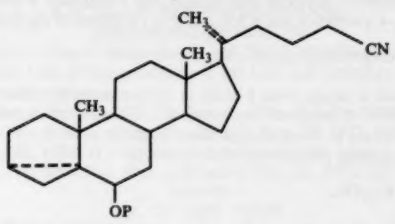
4,134,904

SYNTHESIS OF STEROIDS

Emil T. Kaiser, 5634 S. Woodlawn Ave., Chicago, Ill. 60637

Filed Aug. 30, 1977, Ser. No. 829,009
Int. Cl.² C07J *9/00, 1/00*
U.S. Cl. 260—397.1 **7 Claims**

1. A steroid compound having the structure



where P is an alkyl group.

4,134,905

TRANS ACID RESTRICTED HARD BUTTERS

John M. Hasman, Berea, Ohio, assignor to SCM Corporation, New York, N.Y.

Filed Jul. 13, 1977, Ser. No. 815,158
Int. Cl.² C11C *3/12*
U.S. Cl. 260—409 **10 Claims**

1. A process for making a non-fractionated, non-lauric, partially hydrogenated glyceride oil product suitable as a hard butter which comprises:

(a) subjecting said oil to primary hydrogenation in a primary hydrogenation zone under glyceride oil hydrogenation conditions in the presence f about 0.05% to about 3% by weight copper chromite catalyst until the Iodine Value of said oil is between about 100 and 110; and

(b) subjecting said primary hydrogenated oil to secondary hydrogenation in a secondary hydrogenation zone under glyceride oil hydrogenation conditions in the presence of about 0.001 to about 0.1% by weight nickel hydrogenation catalyst until is produced said product having a Wiley Melting Point of between about 92.20 and 120° F, no more than about 45% trans-oleic acid content, and a Solids Fat Index of at least about 42 at 80° F, no more than about 30 at 92° F, and between 0 and about 15 at 100° F.

4,134,906

SILYLHYDROCARBYL PHOSPHINE TRANSITION METAL COMPLEXES

Alexis A. Oswald, Mountainside, and Lawrence L. Murrell, Elizabeth, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 610,628, Sep. 5, 1975, Pat. No. 4,083,803, which is a continuation-in-part of Ser. No. 265,507, Jun. 23, 1972, Pat. No. 3,907,852. This application Sep. 1, 1977, Ser. No. 829,898
Int. Cl.² C07F *15/00*
U.S. Cl. 260—429 CY **16 Claims**

1. Silylhydrocarbyl phosphine transition metal complexes of the formula:

$$[(R'_{3-x}P)_sQ_ySiR_{4-y}]_g \cdot (MX_n)_z$$

wherein R is selected from the group consisting of chloro, C_1–C_4 acyloxy and C_1–C_6 hydrocarbyl provided that at least one of the groups is not hydrocarbyl, Q is $(CH_2)_p$, p being 8 to 30, M is a transition metal of Group VI to VIII, X is an anion or organic ligand, R' is selected from the group consisting of C_1–C_{30} alkyl, cyclohexyl and phenyl, x is 1 to 3, y and z are 1 or 2, g is 1 to 6, s is 1 to 3 and n is 2 to 6.

10. A method for the preparation of silylhydrocarbyl phosphine transition metal complexes comprising the steps of:

(a) selectively adding silanes of the formula

$$R_{4-y}SiH_y$$

wherein R is selected from the group consisting of chlorine, C_1–C_4 acyloxy and C_1–C_4 saturated aliphatic or aromatic

hydrocarbyl provided that at least one substituent is chlorine or C_1–C_4 acyloxy, and y is 1 or 2 to α - ω dienes of the formula:

$$CH_2{=}CH(CH_2)_kCH{=}CH_2$$

wherein k ranges from 1 to 26, at temperatures between −90° and +90° C using reactant ratios of 2 to 6 moles of diolefin per mole silane to form alkenyl silane adducts;

(b) adding phosphines of the formula

$$R'_{3-x}PH_x$$

wherein R′ is selected from the group consisting of C_1–C_{30} alkyl, cyclohexyl and phenyl and x is 1 to 3 to the alkenyl silane of the formula

$$(R_{4-y}Si[(CH_2)_lCH{=}CH_2]_y)$$

of step (a) wherein R and y are as previously defined and l is k + 2, at temperatures between −100° and +16° C to form silylhydrocarbyl phosphines;

(c) complexing silylhydrocarbyl phosphines of the formula:

$$(R'_{3-x}P)_z[(CH_2)_m]_ySiR_{4-y}$$

of step (b) wherein R, R′ and x and y are as previously defined and z is 1–3 and m is k + 4, with transition metal compounds of the formula MX_n, wherein M is a transition metal selected from the group consisting of Group VI, VII and VIII of the Periodic Table of the Elements, X is an anion or organic ligand which satisfies the coordination sites of the metal and n is 2 to 6, to form silylhydrocarbyl phosphine transition metal complexes of the formula

$$[(R'_{3-x}P)_z(CH_2)_mSiR_{4-y}]_g{*}(MX_n)_s$$

wherein R, R′, M, X, n, m, y and z are as previously defined, g is 1 to 6 and s is 1 to 3.

4,134,907

PROCESS FOR ENHANCING THE FUEL VALUE OF LOW BTU GAS

Frank M. Stephens, Jr., Lakewood, Colo., assignor to Hazen Research, Inc., Golden, Colo.

Filed Jul. 21, 1977, Ser. No. 817,576
Int. Cl.² C07C *1/04*
U.S. Cl. 260—449.6 M **7 Claims**

1. A process for converting a first gas mixture containing carbon monoxide and hydrogen into a second gas mixture having a substantially increased fuel value, comprising methane, in a single reaction zone which comprises:

(a) maintaining iron and Fe_3C in a fluid bed;

(b) continuously introducing said first gas mixture into said fluid bed;

(c) maintaining a temperature of about 600° F – 1200° F and a pressure of about 1–10 atmospheres in said fluid bed so that some of the carbon monoxide is reduced to carbon, the iron is reacted with carbon to form Fe_3C, and the Fe_3C is reacted with hydrogen to form methane and reform iron, and

(d) continuously removing from said fluid bed as a product said second gas mixture of methane, carbon monoxide and hydrogen having an increased fuel value.

4,134,908

METHANATION PROCESS

Peter Steiner, Edison, and Ernest L. Daman, Westfield, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 28, 1977, Ser. No. 791,755
Int. Cl.² C07C *1/04*
U.S. Cl. 260—449.6 M **4 Claims**

1. In a process for producing methane by reacting carbon monoxide with hydrogen, the improvement comprising feeding a gas containing hydrogen and carbon monoxide into at least one reaction tube containing an annular, spiral-shaped passageway defined by a helical, nickel-containing catalyst which is wrapped around a central cooling duct; said spiral-shaped passageway having a Y factor of 3.0 or less, said Y factor being defined by the equation Y = L/D wherein L is the length of a single twist and D is the diameter of the reaction tube; passing a cooling medium through said cooling duct and cooling the exterior of said reaction tube to remove the heat of reaction.

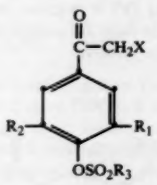
4,134,909

3-METHOXY-4-ARYLSULPHONYLOXY-ACETOPHENONES

Charles Pigerol, Saint-Ouen; Paul de Cointet de Fillain, Sisteron; Yves Bazile, Sisteron; Michel Chignac, Sisteron, and Claude Grain, Volonne, all of France, assignors to Labaz, Paris, France

Filed Jun. 29, 1977, Ser. No. 811,054
Claims priority, application France, Jul. 15, 1976, 76 21581
Int. Cl.² C07C *143/68*; C08K *5/10*
U.S. Cl. 260—456 P **9 Claims**

1. A new acetophenone derivative of the general formula:



I

wherein X represents a hydrogen or halogen atom, R_1 and R_2, which are the same or different, each represent a hydrogen atom or a methoxy radical and R_3 represents an aryl radical, with the proviso that at least one of the substituents R_1 and R_2 is not a hydrogen atom.

4,134,910

RECOVERY OF ISOPHTHALONITRILE

Richard K. Barchas, Upper Montclair; Abraham P. Gelbein, Plainfield, and William J. Santore, Bloomfield, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed May 17, 1977, Ser. No. 797,810
Int. Cl.² C07C *121/54*
U.S. Cl. 260—465 H **7 Claims**

1. A process for separating isophthalonitrile from a gaseous isophthalonitrile production reaction effluent including isophthalonitrile and water vapor, comprising:

direct quench cooling of the gaseous isophthalonitrile production reaction effluent with an organic quench liquid in which isophthalonitrile is soluble to effect cooling of the effluent to a temperature above the dew point of water in the effluent and at which essentially all of the isophthalonitrile is condensed from the effluent as a solution in the quench liquid and recovering from said direct quench cooling a gas containing water vapor which is essentially free of isophthalonitrile and a liquid solution of the isophthalonitrile in the quench liquid which is free of water.

4,134,911

3-ENDO-PROTECTED HYDROXYL-TRICYCLO[3,2,0,0^{2,7}]-HEPTAN-6-ONES

Stanley M. Roberts, Macclesfield, United Kingdom, assignor to Allen & Hanburys Limited, London, England

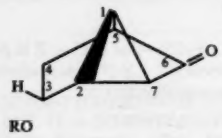
Filed Dec. 2, 1976, Ser. No. 746,741

Claims priority, application United Kingdom, Dec. 3, 1975, 49686/75

Int. Cl.^{2} C07F *7/18*

U.S. Cl. 260—448.8 R 9 Claims

1. A compound of formula (II)



(II)

RO

wherein R represents a, tri(hydrocarbyl)silyl, group.

4,134,912

PROCESS FOR PREPARING CARBOXYLIC ACIDS

Anthony N. Naglieri, Pine Brook, and Nabil Rizkalla, River Vale, both of N.J., assignors to Halcon International, Inc., New York, N.Y.

Filed Nov. 8, 1976, Ser. No. 740,145

Int. Cl.^{2} C07C *51/12, 51/14*

U.S. Cl. 562—579 4 Claims

1. A process for the preparation of a monocarboxylic acid which comprises reacting carbon monoxide and a hydrocarbyl alcohol in the presence of an iodide and in the presence of a catalyst consisting essentially of nickel or a nickel compound and a promoter which is tin or a tin compound, said iodide being employed in the amount of at least 10 mols, expressed as I, per 100 mols of alcohol, said reacting being carried out at a temperature of 25–350° C and at a carbon monoxide partial pressure of 1–10,000 psi.

4,134,913

AMIDOSULFENYL CHLORIDE INTERMEDIATES

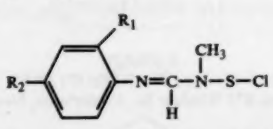
Victor L. Rizzo, Almena Township, Van Buren County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 723,076, Sep. 14, 1976, Pat. No. 4,066,765, which is a division of Ser. No. 575,247, May 7, 1975, Pat. No. 3,998,969. This application Apr. 28, 1977, Ser. No. 792,053

Int. Cl.^{2} C07C *51/58*

U.S. Cl. 260—543 H 1 Claim

1. A compound of the formula:



wherein R_1 is lower alkyl of from 1 to 4 carbon atoms; and R_2 is hydrogen, halogen, or lower alkyl of from 1 to 4 carbon atoms.

4,134,914

1-ACYL-4-SUBSTITUTED PHENYL THIOSEMICARBAZIDES

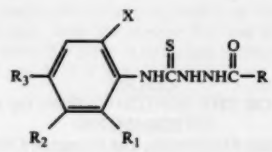
Charles J. Paget, Indianapolis, and James H. Wikel, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 739,158, Nov. 5, 1976, Pat. No. 4,082,762, which is a division of Ser. No. 607,848, Aug. 25, 1975, Pat. No. 4,008,242, which is a division of Ser. No. 449,141, Mar. 7, 1974, Pat. No. 3,937,713. This application Dec. 22, 1977, Ser. No. 863,636

Int. Cl.^{2} C07C *159/00*

U.S. Cl. 260—552 SC 7 Claims

1. A 1-acyl-4-(o-halophenyl)-3-thiosemicarbazide compound of the formula



wherein

R is hydrogen, C_1–C_{11} alkyl, cyclopropyl or trifluoromethyl;

R_1 is hydrogen, bromo, chloro or fluoro;

R_2 and R_3 are independently hydrogen, C_1–C_3 alkyl, C_1–C_3 alkoxy, bromo, chloro, fluoro or trifluoromethyl with the limitation that at least one of R_2 and R_3 is hydrogen;

X is bromo, chloro or fluoro;

subject to the further limitation that when R_1 is halogen, R is other than hydrogen and R_2 is hydrogen.

4,134,915

CONTINUOUS MANUFACTURE OF FORMAMIDE

Heinz Hohenschutz, Mannheim; Max Strohmeyer, Limburgerhof; Manfred Herr, Ludwigshafen, and Hans Kiefer, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed May 5, 1977, Ser. No. 793,788

Claims priority, application Fed. Rep. of Germany, May 22, 1976, 2623173

Int. Cl.^{2} C07C *102/06*

U.S. Cl. 260—561 R 5 Claims

1. In a process for the continuous manufacture of formamide from methyl formate and gaseous ammonia, the improvement which comprises carrying out the reaction in a reactor at from 30 to 90° C, drawing off from 5 to 20% by volume of the reactor output continuously and feeding it to a formamide working-up stage, and cooling the remainder of the reactor output to from 25 to 60° C in an external circuit maintained by means of a pump and mixing it with the amount of fresh methyl formate required for steady-state operation, after which the amount of gaseous ammonia required for steady-state operation is introduced into the resulting stream of liquid through a jet, by the sucking-jet principle, and the stream of liquid is recycled to the reactor.

4,134,916

N-POLYALKOXYALKYL ACRYLAMIDES OR METHACRYLAMIDES

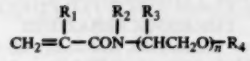
Philip H. Moss, and Edward C. Y. Nieh, both of Austin, Tex., assignors to Texaco Development Corp., New York, N.Y.

Filed Feb. 6, 1978, Ser. No. 875,274

Int. Cl.^{2} C07C *97/03, 103/133, 103/60*

U.S. Cl. 260—561 N 4 Claims

1. An acrylamide or methacrylamide monomer characterized by the following structural formula:



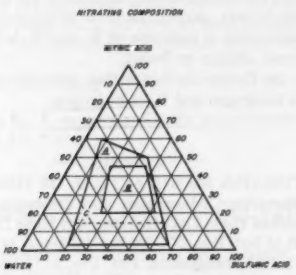
where R_1 is hydrogen or methyl, R_2 and R_3 are hydrogen or lower alkyl, R_4 is a primary or secondary alkyl group or an alkaryl group, each group containing 6–25 carbon atoms, and n is an integer ranging from 2 to 30.

4,134,917

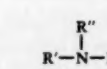
METHOD FOR THE DENITROSATION OF ORGANIC NITROSAMINES

Lawrence J. Ross, Martinsville, and George A. Chiarello, Trenton, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Filed Apr. 25, 1977, Ser. No. 790,375
Int. Cl.[2] C07C *85/11*
U.S. Cl. 260—577 **9 Claims**

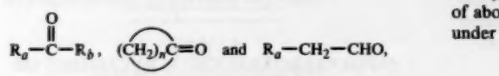


1. A method for the denitrosation of N-nitroso compounds of formula:



wherein R′ represents alkyl C_1–C_{12}, cycloalkyl C_4–C_8, haloalkyl C_1–C_{10}, alkoxy(C_1–C_6)alkyl (C_1–C_8), phenyl or substituted phenyl wherein the substituents are halogen, alkyl C_1–C_4, alkoxy C_1–C_4, trifluoromethyl, alkoxy(C_1–C_4)alkyl(C_1–C_4) or nitro; R″ represents alkyl C_1–C_8, cycloalkyl C_4–C_8, monohaloalkyl C_1–C_6 or alkoxy(C_1–C_4)alkyl(C_1–C_4); comprising

reacting a nitroso compound of the above formula with a ketone or aldehyde represented by the formulae;



wherein R_a represents lower alkyl, phenyl, or substituted phenyl, and R_b represents lower alkyl; and n is an integer of 3 to 7; in the presence of hydrochloric or hydrobromic acid and optionally an inert organic solvent at atmospheric to superatmospheric pressures in the temperature range of from 20° C. to 120° C., for a period of time sufficient to essentially complete the reaction.

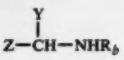
4,134,918

ALPHA-HALOMETHYL DERIVATIVES OF AMINES

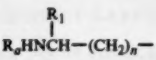
Philippe Bey, Strasbourg, and Michel Jung, Illkirch Graffenstaden, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

Filed Sep. 6, 1977, Ser. No. 830,998
Int. Cl.[2] C07C *87/22, 69/02, 103/10*; C01B *25/26*
U.S. Cl. 260—583 GG **10 Claims**

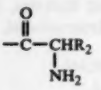
1. A compound of the formula



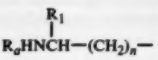
wherein Y is FCH_2—, F_2CH—, or F_3C—, Z is β-methylthioethyl, β-benzylthioethyl, S-(5′-desoxyadenosin-5′-yl)-S-methylthioethyl, γ-guanidinopropyl or



wherein n is the integer 2 or 3 and R_1 is hydrogen or a lower alkyl group of from 1 to 4 carbon atoms with the proviso that when R_1 is other than hydrogen, n is 2; each of R_a and R_b is hydrogen, alkylcarbonyl wherein the alkyl moiety has from 1 to 4 carbon atoms and is straight or branched, alkoxycarbonyl wherein the alkoxy moiety has from 1 to 4 carbon atoms and is straight or branched or the group



wherein R_2 is hydrogen, a straight or branched lower alkyl group of from 1 to 4 carbon atoms, benzyl or *p*-hydroxybenzyl; with the provisos that when Z is β-benzylthioethyl or S-(5′-desoxyadenosin-5′-yl)-S-methylthioethyl, R_b is hydrogen, when Z is β-methylthioethyl, Y is other than F_3C—, and when Z is



each of R_a and R_b can be the same or different; and pharmaceutically acceptable salts and individual optical isomers thereof.

4,134,919

PROCESS FOR PRODUCING MENTHONE

Tohr Yamanaka, Kamakura, and Misao Yagi, Iwata, both of Japan, assignors to Takasago Perfumery Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1977, Ser. No. 806,432
Int. Cl.[2] C07C *45/00, 45/16*
U.S. Cl. 260—586 P **6 Claims**

1. A process for producing menthone which comprises dehydrogenating citronellol in a reaction system containing a Raney-type catalyst or a metal oxide catalyst at a temperature of about 150° to about 260° C in an atmosphere of hydrogen under a pressure of 0 to about 5 kg/cm².G.

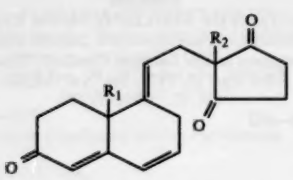
4,134,920

14β-HYDROXYANDROSTANES

Zdenek Valenta, 872 Windsor St., Fredericton, New Brunswick, Canada

Filed Jun. 29, 1977, Ser. No. 811,393
Int. Cl.[2] C07C *49/48*
U.S. Cl. 260—586 E **2 Claims**

1. A compound of the formula



wherein R_1 and R_2 are each independently lower alkyl and the optical antipodes and geometrical isomers thereof.

4,134,921

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-m-PHENYLENE-13,14-DIDEHYDRO-PG COMPOUNDS

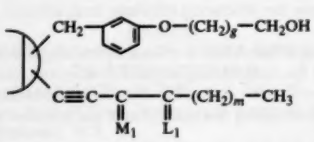
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 708,752, Jul. 26, 1976, Pat. No. 4,058,564. This application Jul. 11, 1977, Ser. No. 814,500

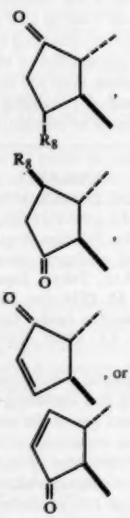
Int. Cl.[2] C07C *49/76*

U.S. Cl. 260—590 C **65 Claims**

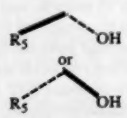
1. A prostaglandin analog of the formula



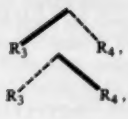
wherein is



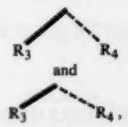
wherein R_8 is hydrogen or hydroxy; wherein M_1 is



wherein R_5 is hydrogen or methyl; wherein L_1 is



or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro; wherein g is one, 2, or 3; and wherein m is one to 5, inclusive.

4,134,922

ISOMERIZATION PROCESS

Geoffrey M. A. Leeder, Luton, England, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

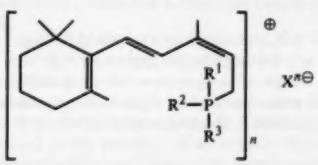
Filed Sep. 26, 1977, Ser. No. 836,877

Claims priority, application United Kingdom, Oct. 14, 1976, 42725/76

Int. Cl.[2] C07F *9/54*

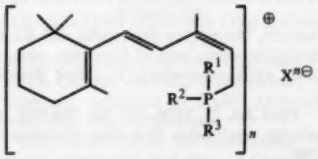
U.S. Cl. 260—606.5 F **12 Claims**

1. A process for the isomerization of a composition containing 9-cis-beta-ionylidenethyltriarylphosphonium salt of the formula



wherein R^1, R^2 and R^3 each is aryl, $X^{n\ominus}$ is an anion of a strong acid and n is 1, 2 or 3,

to a corresponding 9-trans-beta-ionylidenethyltriarylphosphonium salt of the formula



wherein n, R^1, R^2, R^3 and $X^{n\ominus}$ are as above,

comprising heating to a temperature of from 50° C to 200° C said 9-cis-beta-ionylidenethyltriarylphosphonium salt in the presence of an organic solvent.

4,134,923

PROCESS FOR PRODUCING A METAL HYDROXIDE ADDUCT OF A TRIARYLBORANE

Ronald A. Reimer, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 2, 1977, Ser. No. 830,043

Int. Cl.[2] C07F *5/02*

U.S. Cl. 260—606.5 B **6 Claims**

1. A process for producing a metal hydroxide adduct of a

triarylborane from the amine adduct thereof which comprises reacting at a temperature in the range 60°–150° C. a mixture of said amine adduct with a metal hyroxide selected from the class consisting of alkaline alkali earth and mixtures thereof, removing substantially all of amine liberated during the reaction and thereby forming the metal hydroxide adduct of said borane.

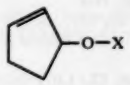
4,134,924

PREPARATION OF 2-CYCLOPENTENYL ETHERS

Benjamin Phillips, Riverside, Conn., and Walter J. Skraba, White Plains, N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 11, 1977, Ser. No. 823,750
Int. Cl.² C07C *41/00*
U.S. Cl. 568—664 **14 Claims**

1. Method of preparing bis-(2-cyclopentenyl) ether which consists essentially of contacting one part by weight of at least one 2-cyclopentenyl derivative having the formula:



wherein X is

or H and R is H or an alkyl or cycloalkyl having 1 to about 8 carbons or aryl having 6 to 10 carbons with about 0.1 to about 10 parts by weight of an aqueous solution containing about 0.01 to about 2.0 moles per liter of solution of an acid having pKa of about 2 to about 3, at a temperature of about 0° C. to about 100° C.

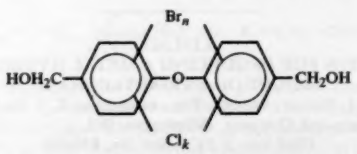
4,134,925

AR-OCTAHALOGENDIPHENYLETHER-4,4-DIMETHANOLS

Egon N. Petersen, Neunirchen-Seelscheid, and Klaus Schrage, Konigswinter-Uthweiler, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf Bezirk Cologne, Germany

Filed Jul. 27, 1976, Ser. No. 709,058
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1975, 2534209
Int. Cl.² C07C *43/20*
U.S. Cl. 568—637 **6 Claims**

1. ar-Octahalogendiphenylether-4,4'-dimethanol of the formula:



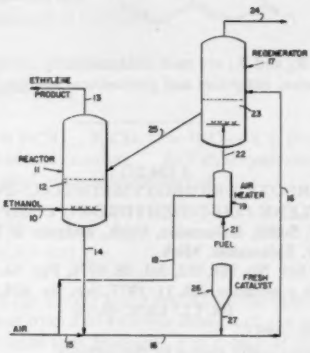
wherein the n represents a number of from 0 to 8 and the k represents 8 - n.

4,134,926

PRODUCTION OF ETHYLENE FROM ETHANOL

Utah Tsao, Jersey City, and Howard B. Zasloff, Rockaway, both of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Filed Apr. 18, 1977, Ser. No. 788,304
Int. Cl.² C07C *1/24*
U.S. Cl. 260—682 **4 Claims**



1. A process for producing ethylene from ethanol, comprising:

introducing ethanol into a reactor containing a dehydrating catalyst for dehydrating ethanol to ethylene, said ethanol maintaining said catalyst in a fluidized state in said reactor, said reactor being maintained at a temperature of at least 700° F;

withdrawing an ethylene containing effluent from the reactor;

withdrawing a portion of the catalyst from the reactor;

introducing withdrawn catalyst into a regenerator wherein the catalyst is heated in a fluidized state by heated gas, said heating effecting regeneration of the catalyst; and

recycling heated catalyst from the regenerator to the reactor, said heated catalyst providing heat requirements for dehydration of ethanol to ethylene.

4,134,927

PRODUCTION OF THERMOPLASTIC OLEFIN ELASTOMERS

Toru Tomoshige, Ohtake; Riichiro Nagano, Waki, and Tetsuo Imamura, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Filed Oct. 14, 1976, Ser. No. 732,194
Claims priority, application Japan, Oct. 17, 1975, 50/124349
Int. Cl.² C08F *255/04*
U.S. Cl. 260—878 R **10 Claims**

1. A process for preparing a thermoplastic olefin elastomer which comprises mixing and extruding in a screw extruder in an atmosphere of an inert gas in the absence of a basic agent selected from the group consisting of organic diamines, glycols, and oxides and hydroxides of metals selected from the group consisting of alkali metals, alkaline earth metals, cadmium, zinc, lead and iron, (A) an olefin rubber having a number average molecular weight of about 10,000 to 100,000 and composed of a copolymer of ethylene with an α-olefin containing at least 3 carbon atoms with the ethylene content of the rubber being about 50 to 85 mole%, and (B) about 1 to 15 parts by weight, per 100 parts by weight of the olefin rubber (A), of a dicarboxylic acid monomer selected from the group consisting of unsaturated dicarboxylic acids and the acid anhydrides thereof at a temperature of about 200° to 320° C. in the presence of (C) 0.02 to 3 milliequivalents, per 100 grams of the olefin rubber (A), of an alkyl peroxide, and in the absence of molecular oxygen.

4,134,928

TETRABLOCK POLYDIENES

George A. Moczygemba, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 24, 1977, Ser. No. 809,822
Int. Cl.[2] C08F 297/02
U.S. Cl. 260—879 6 Claims

1. A tetrablock copolymer having the formula

$$B_h - I_h' - B_h' - I_h$$

wherein

B_h and B_h' are hydrogenated blocks of polymerized butadiene,

I_h and I_h' are hydrogenated blocks of polymerized alkyl substituted conjugated diene of 5 or 6 carbon atoms per molecule.

4,134,929

ALLYL 2-CYANOACRYLATE-BASED ORTHODONTIC BRACKET ADHESIVE

Diane M. Stoakley, Church Hill, and John R. Dombroski, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

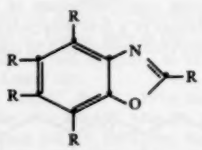
Filed Jul. 23, 1976, Ser. No. 708,158
Int. Cl.[2] C08L 33/14
U.S. Cl. 260—881 8 Claims

1. A solidified adhesive compound exhibiting hydrolytic stability which solidified adhesive compound results from combining components A, B and C as follows:

A. a polymerizable monomeric allyl 2-cyanoacrylate containing portion prepared from

1. from 75 to about 92 parts by weight of allyl 2-cyanoacrylate;
2. from 1 to about 12 parts by weight of a difunctional monomer diester of an acid from the group consisting of acrylic and methacrylic acid and a diol having an aromatic nucleus; and
3. from 3 to about 20 parts by weight of a thickening agent selected from poly(methylacrylate-co-acrylonitrile) polymers;

B. from 0.1 to about 3 weight percent based upon the weight of component A of a hydrophobic cyclic imino initiator selected from the group consisting of 2,4,6-tri(allyloxy)-S-triazine, tri(alkyloxy)-S-triazines having 1 to about 20 exocyclic carbon atoms; and benzoxazoles having the formula



wherein each R is the same or different and represents hydrogen, phenyl, alkyl of 1 to about 20 carbon atoms, chloro or bromo; and

C. an amount of an organic peroxide free radical providing compound sufficient to cause crosslinking of the difunctional monomer diester with the allyl 2-cyanoacrylate.

4,134,930

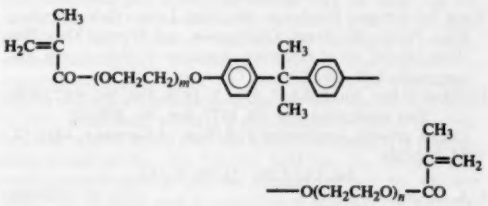
RESINOUS MATERIALS FOR RESTORING CROWNS

Takao Kubota, Sayama, Japan, assignor to G-C Dental Industrial Corp., Tokyo, Japan

Filed Dec. 15, 1976, Ser. No. 750,978
Claims priority, application Japan, Dec. 15, 1976, 51-148406
Int. Cl.[2] C08L 51/00
U.S. Cl. 260—875 6 Claims

1. A slurried resinous material for restoring crowns, comprising:

a liquid component A having the following formula:



wherein the average molar amount of ethylene oxide units (m + n), present satisfies the relation: $2.2 \leqq (m + n) \leqq 6$, and a power component B which is a methacrylic resin polymer,

wherein said liquid component A is mixed with said powder component B in proportions ranging from 1:3 to 4:1.

4,134,931

PROCESS FOR TREATMENT OF OLEFIN POLYMER FIBRILS

Dwight R. Hayes, Jr., Houston, Tex., and Richard R. Whitney, Sacramento, Calif., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Mar. 16, 1978, Ser. No. 887,163
Int. Cl.[2] C08L 29/04, 23/04
U.S. Cl. 260—897 B 4 Claims

1. In a process in which high molecular weight olefin polymer fibrils are prepared by precipitation from a hydrocarbon medium, refined in the presence of an organic liquid miscible with both hydrocarbons and water, and subsequently slurried in the presence of an aqueous solution of polyvinyl alcohol; the improvement which comprises slurrying said fibrils in the presence of said aqueous polyvinyl alcohol solution while subjecting said solution to ultrasonic vibrations.

4,134,932

SURFACE-COATING BINDERS FOR CATHODIC ELECTROCOATING

Fritz E. Kempter, Mannheim; Heinrich Hartmann, Limburgerhof, and Erich Gulbins, Heidelberg-Neuenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1978, Ser. No. 884,909
Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 2711425
Int. Cl.[2] C08L 63/00
U.S. Cl. 260—831 6 Claims

1. A surface-coating binder for the cathodic electrocoating of electrically conductive surfaces, comprising a protonized heat-curable reaction product (A), substantially free from epoxide groups, of

(a) one or more Mannich bases, prepared from

(a_1) one or more polyhydric condensed phenols which may or may not contain ether groups,

(a_2) one or more secondary amines which contain one or more hydroxyalkyl groups, with or without one or more secondary amines which do not contain such groups and

(a_3) formaldehyde or a formaldehyde donor, with

(b) one or more epoxy resins,

which binder also contains from 1 to 40% by weight, based on the total of (A) + (B), of a water-insoluble non-ionic resin (B), free from epoxide groups and containing urethane groups, which has been obtained by reacting a partially blocked diisocyanate or higher polyisocyanate with a reaction product of a polyepoxide and one or more low molecular weight compounds containing SH and/or OH groups.

4,134,933
4,4-THIO-BIS-(DIALKYLPHENOL)/FORMALDEHYDE CONDENSATES

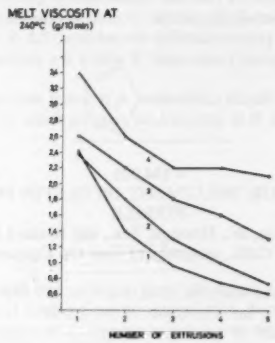
Hans Feichtinger, Dinslaken; Siegfried Lutze, Gelsenkirchen; Hans-Walter Birnkraut, Oberhausen, and Werner Kluy, Bochum-Stiepel, all of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Germany

Division of Ser. No. 574,811, May 5, 1975, Pat. No. 4,072,659. This application Sep. 30, 1977, Ser. No. 838,428

Claims priority, application Fed. Rep. of Germany, May 17, 1974, 2424201

Int. Cl.[2] C08L *23/06, 61/12*

U.S. Cl. 260—848 **4 Claims**



1. An olefin polymer or copolymer composition containing a 4,4'-thio-bis-(dialkylphenol)/formaldehyde condensation product having a molecular weight of 1,000 to 4,000.

4,134,934
SOLUTION OF AN UNSATURATED POLYESTER AND A COPOLYMERIZABLE MONOMER

Georg Blumenfeld, St. Augustin, and Norbert Vollkommer, Troisdorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Division of Ser. No. 640,312, Dec. 12, 1975, which is a continuation of Ser. No. 488,601, Jul. 12, 1974, abandoned. This application Jan. 9, 1978, Ser. No. 868,106

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1973, 2336704

Int. Cl.[2] C08L *67/06;* **C08G** *63/68*

U.S. Cl. 260—869 **4 Claims**

1. A solution of an unsaturated polyester polymer soluble in styrene in an amount of 20 to 80% by weight and soluble in methylacrylate, methyl methacrylate, acrylonitrile, divinylbenzene and diallylphthalate and capable of being formed into a colorless transparent plate, said unsaturated polyester prepared by the condensation polymerization of a mixture of monomers, said mixture consisting essentially of:

A. A member selected from the group consisting of fumaric acid, maleic acid, maleic acid anhydride, an alkali salt of maleic acid and an alkali salt of fumaric acid;

B. A member selected from the group consisting of hexachlorenedomethylene tetrahydrophthalic acid, hexachlorophthalic acid, tetrahydrophthalic acid, adipic acid, their alkali salts or anhydrides, orthophthalic acid, its alkali salt, anhydride or lower alkyl ester, isophthalic acid, its alkali salt, anhydride or lower alkyl ester and terephthalic acid, its alkali salt, anhydride or lower alkyl ester;

C. An alcohol selected from the group consisting of ethylene glycol, diethylene glycol, propanediol-1,2, butanediol-1,3, butanediol-1,4, neopentyl glycol and 1,4-bis-(hydroxymethyl)-cyclohexane; and

D. 1 to 100 mol percent, relative to the sum of the C components, of a member selected from the group consisting of 2,3,5,6-tetrachloro-p-xylylene glycol, 2,3,4,6-tetrachloro-m-xylylene glycol, 2,3,5,6-tetrachloro-p-xylylene glycol-bis-(2,2-dimethyl-γ-hydroxyproyl ether), 2,3,5,6-tetrachloro-p-xylylene dichloride and 2,3,4,6-tetrachloro-m-xylylene dichloride, said solution containing a copolymerizable monomer, copolymerizable with said unsaturated polyester.

4,134,935
DENTAL VARNISHES

Bernd Quiring, Leverkusen; Kuno Wagner, Leverkusen-Steinbuchel, and Joachim König, Schildgen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Continuation of Ser. No. 277,804, Aug. 3, 1972, abandoned. This application Jul. 6, 1976, Ser. No. 702,904

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1971, 2140404

Int. Cl.[2] C08L *75/00*

U.S. Cl. 260—859 R **13 Claims**

1. A graft copolymer or telomerisate of

(1) from about 10 to 95% by weight, based on the weight of the graft copolymer, of a polyisocyanate, and

(2) a copolymer of:

(a) from about 5 to about 70% by weight, based on the weight of the graft copolymer, of methyl methacrylate,

(b) from about 0.3 to about 10% by weight, based on the weight of the graft copolymer, of at least one olefinic comonomer bearing a bridging member selected from an isocyanate group and a group capable of reacting with isocyanate groups, and

(c) from 0 to about 25% by weight, based on the weight of the graft copolymer, of an olefinic comonomer, said graft copolymer having a free isocyanate content of 7% to 12.5% by weight.

4,134,936
COPOLYCARBONATES OF PHENOLPHTHALEIN POLYCARBONATES AND OTHER POLYCARBONATES

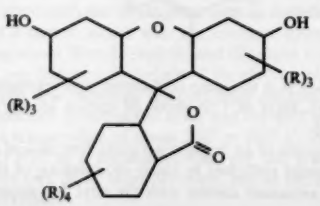
Joseph B. Byrne, Antioch, Calif., and Christian A. Weber, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 27, 1976, Ser. No. 754,399

Int. Cl.[2] C08L *69/00*

U.S. Cl. 260—860 **11 Claims**

1. A normally solid copolycarbonate of from about 5 to about 95 weight percent of a first polycarbonate of at least 5 mole percent of a trityldiol represented by one of the following formulas:



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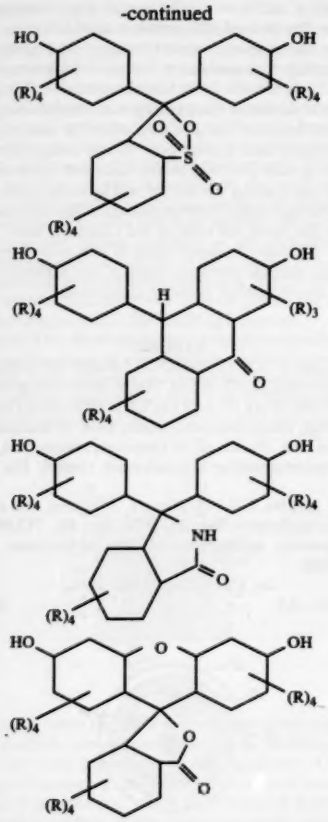


wherein each R is independently H, Cl, Br, I, NO_2 or alkyl having from 1 to 6 carbons and from about 5 to about 95 weight percent of a second polycarbonate of at least 5 mole percent of a diol other than a trityldiol, said weight percentages being based on diol content of the copolycarbonate, said copolycarbonate having an impact resistance better than that of a similar polycarbonate copolymer having diols in proportions which are the same as the diols and diol proportions of the copolycarbonate.

4,134,937

POLYESTER RESIN COMPOSITION

Robert A. Cass; John M. Butler, both of Dayton, and Edward F. Janzow, Xenia, all of Ohio, assignors to Monsanto Research Corporation, St. Louis, Mo.

Division of Ser. No. 478,657, Jun. 12, 1974, abandoned, which is a continuation of Ser. No. 255,633, May 22, 1972, abandoned.

This application Jul. 18, 1977, Ser. No. 816,571

Int. Cl.[2] C08L *67/06*

U.S. Cl. 260—862 **6 Claims**

1. A neutron shielding composition comprising an unsaturated polyester resin having incorporated therein at least a sufficient amount of polyethylene to substantially increase the neutron shielding properties of said resin and at least a sufficient amount of a boron compound and/or a lithium compound to further increase neutron shielding properties.

4,134,938

PROCESS FOR POLYMER LITHIATION IN GRAFT POLYMERIZATION

Arthur W. Langer, Jr., Watchung, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 713,659, Aug. 12, 1976, which is a division of Ser. No. 562,826, Mar. 28, 1975, which is a continuation of Ser. No. 309,359, Nov. 24, 1972, abandoned, which is a continuation-in-part of Ser. No. 81,181, Oct. 15, 1970, Pat. No. 3,751,384, which is a continuation-in-part of Ser. No. 825,384, May 16, 1969, Pat. No. 3,536,679, which is a continuation-in-part of Ser. No. 589,240, Oct. 25, 1966, Pat. No. 3,451,988, which is a continuation-in-part of Ser. No. 266,188, Mar. 19, 1963, abandoned. Said Ser. No. 562,826 is a continuation-in-part of Ser. No. 690,054, Dec. 13, 1967, which is a continuation-in-part of Ser. No. 560,110, Jun. 24, 1966, abandoned, which is a continuation-in-part of Ser. No. 505,976, Nov. 1, 1965, abandoned, which is a continuation-in-part of Ser. No. 359,434, Apr. 3, 1964, Pat. No. 3,458,856, which is a continuation-in-part of Ser. No. 266,188. Said Ser. No. 562,826 is a continuation-in-part of Ser. No. 886,008 and Ser. No. 886,009 both Dec. 17, 1969, each is a division of said Ser. No. 690,054. Said Ser. No. 562,826 is a continuation-in-part of said Ser. No. 690,076, Dec. 13, 1967, which is a continuation-in-part of said Ser. No. 560,110. Said Ser. No. 562,826 is a continuation-in-part of Ser. No. 61,813, Aug. 6, 1970, which is a continuation-in-part of said Ser. No. 825,884. Said Ser. No. 562,826 is a continuation-in-part of Ser. No. 60,772, Aug. 3, 1970.

This application Jul. 28, 1977, Ser. No. 819,847

Int. Cl.[2] C08F *257/02, 271/02*

U.S. Cl. 260—877 **11 Claims**

1. A process for preparing graft polymers which comprises contacting an anionically polymerizable monomer with an aromatic polymer-Li-tertiary chelating polyamine complex in which the Li-tertiary chelating polyamine moiety of the complex is attached to carbon atoms of units within the polymer, said aromatic polymer being selected from the group consisting of poly-(N-methyl)-styrene imine, or styrene-ethylene copolymer, and said anionically polymerizable monomer being ethylene, said ethylene being grafted onto aromatic sites of said aromatic polymer.

4,134,939

LIQUID DISTRIBUTOR FOR THIN-FILM, TUBE-BUNDLE APPARATUS

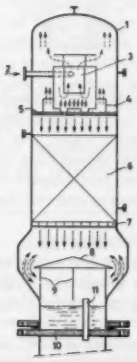
Umberto Zardi, San Donato Milanese (Milan), and Vincenzo Lagana', Milan, both of Italy, assignors to Snamprogetti, S.p.A., Milan, Italy

Filed Sep. 20, 1976, Ser. No. 724,601

Claims priority, application Italy, Sep. 26, 1975, 27681 A/75

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—112 **1 Claim**



1. Tube-bundle, thin-film apparatus for the treatment of a liquid, including a shell, a horizontal tube plate supported in said shell and a vertically arranged thin-film tube-bundle de-

pending therefrom, wherein the improvement comprises a liquid distributor having:

(a) a bell in the form of a cone and a set of supporting legs connecting the lower edge of said cone with the inner wall of said shell at points spaced above said tube plate to provide an annular zone above said tube plate and below said cone;

(b) a horizontal foraminous plate mounted in the shell above the top of said cone and adapted to feed liquid to the upper surface of said cone;

(c) a conduit extending through the wall of said shell above said foraminous plate and adapted to supply liquid and vapor to the interior of said shell at its upper portion;

(d) distribution sleeves extending through and projecting above said tube plate and connected to the respective tubes comprising said tube bundle, each of said sleeves being formed from a cylindrical pipe attached at its lower end to its associated tube and having an inside diameter smaller than the inside diameter of said associated tube, and having at least one set of bores extending through its wall tangentially to the inner surface of said sleeve wall above said tube plate so that liquid may be fed through said distributor sleeves to their respective associated tubes and caused to flow over the inner surfaces of said tubes in thin films; and

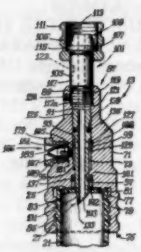
(e) means mounted in the shell below said conduit and above the horizontal foraminous plate for separating vapor from liquid supplied through said conduit and for causing said separated liquid to flow through said foraminous plate over the upper surface of said cone and to said zone above said tube plate for entry into said sleeves through the bores therein and passage to said associated tubes.

4,134,940

HUMIDIFIER ADAPTER WITH AUDIO RELIEF VALVE

Robert M. Sherman, Glenview, Ill., assignor to Aerwey Laboratories, Inc., Arlington, Tex.

Filed Oct. 25, 1977, Ser. No. 845,407
Int. Cl.[2] B01F *3/04*; A61M *15/00*
U.S. Cl. 261—124 **6 Claims**



1. A humidifier adapter for mounting on an engageable portion of a container over a pierceable seal thereon sealing therein a supply of sterile water, and to be connected to a pressurized gas tube for introducing gas into the supply of water to moisten the gas, said adapter comprising:

a housing having means at one end thereof for engaging the container;

an axial bore through said housing;

a spike member for assembly within said housing, said spike member having a tubular body defining a gas passage therein and having one pointed end and being insertable in said bore, the outer surface diameter of said tubular body being substantially less, at least along an axial portion thereof, than the adjacent bore diameter of said housing so as to define a pressure chamber therebetween when said spike member is in inserted relation within said housing;

first and second seal means between said tubular body and the wall of said bore axially spaced apart from each other to form the ends of said pressure chamber;

first port means in the tubular body of said spike member establishing communication between the internal gas passage of said tubular body and the pressure chamber;

second port means in the housing wall establishing communication between the pressure chamber and the outside atmosphere, said second port means being located with respect to said first port means such that their centers are spaced apart along the axis of said housing, both said port means being located intermediate said first and second seal means that form the ends of the chamber; and

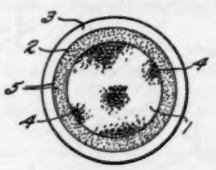
audible relief valve means located in said second port means to effect audible pressure relief of the pressure chamber under above normal pressure conditions.

4,134,941

SPHERICAL FUEL ELEMENTS MADE OF GRAPHITE FOR TEMPERATURE REACTORS AND PROCESS FOR REWORKING IT AFTER THE IRRADIATION

Milan Hrovat; Hans-Joachim Becker, both of Rodenbach, and Hans Huschka, Hanau, all of Germany, assignors to HOBEG Hochtemperaturreaktor-Brennelement GmbH, Hanau, Germany

Division of Ser. No. 531,743, Dec. 11, 1974, Pat. No. 4,022,663. This application Dec. 21, 1976, Ser. No. 753,098
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1973, 2362088
Int. Cl.[2] G21C *21/00, 21/02*
U.S. Cl. 264—0.5 **11 Claims**



1. A process for reprocessing a spherically shaped fuel element for high temperature reactors consisting of a graphite matrix having enbedded separately therein coated fuel and fertile material particles, said fuel element having a solid spherical nucleus containing only fertile material particles encased by graphite, a zone including the same type of graphite containing only fuel material particles encased by said graphite and concentrically surrounding both said nucleus and said fuel material particle containing zone with a concentric pure graphite shell of the same type of graphite as that in both said fertile material containing nucleus and said fuel material particle containing zone comprising burning the graphite matrix in the Head-End stage of the reprocessing in two steps in which the first step comprises burning off the graphite of the shell and the fuel containing zone and the second step comprises burning off the graphite of the fertile material containing nucleus.

4,134,942

METHOD FOR PRODUCING FOAMED ARTICLES

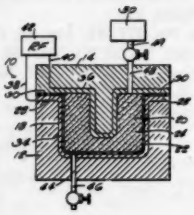
Gordon J. Mirr, deceased, late of Zion, Ill. (by Marie Mirr, executrix); Ivan Lestan, Winthrop Harbor, Ill., and Myron T. Stevens, Kenosha, Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 644,097, Dec. 24, 1975, abandoned. This application Aug. 15, 1977, Ser. No. 824,517
Int. Cl.[2] B29D *27/04*
U.S. Cl. 264—26 **11 Claims**

1. A method for manufacturing an article from a foamable material including the steps of providing a mold having at least two separable, closeable mold selections made from an electri-

cally insulative material, at least one of the mold sections having a mold cavity and each mold section having a molding surface which, when the mold sections are closed together in a molding position, cooperate to define a molding chamber including the mold cavity and having the shape of the article providing a thin layer of an electrically conductive material on each of the mold sections, which layer forms at least a portion of the molding surface of the respective mold section and is adapted to serve as a radio frequency electrode, introducing a foamable and heat curable material into the mold cavity, and applying a radio frequency voltage across the electrodes, and thus through the foamable and heat curable material, after the mold sections are closed together in the molding position, thereby causing internal heating of the material so as to rapidly cure the material to a hardened condition after it has expanded to fill the molding chamber and without generating high internal pressure forces inside the molding chamber.

4. A method for forming a skin-covered, foampadded article comprising the steps of providing a mold having first and second separable, closeable mold sections made from an electrically insulative material, at least one of the mold sections having a mold cavity and each mold section having a molding



surface which, when the mold sections are closed together in a molding position, cooperate to define a molding chamber including the mold cavity and having the shape of the article providing a thin layer of an electrically conductive material on each of the mold sections, which layer forms at least a portion of the molding surface of the respective mold section and is adapted to serve as a radio frequency electrode, separating the mold sections, positioning a sheet of flexible skin-forming material on the first mold section with the outer margin of the skin-forming material extending beyond the margin of the molding surface thereof, clamping the outer margin of the skin-forming material in a fixed position on the first mold section, applying a vacuum tc the first mold section to vacuum form the skin-forming material into tight conformity with the contour of the molding surface of the first mold section, introducing a foamable and heat curable, pad-forming material into the mold cavity, and applying a radio frequency voltage across the electrodes, and thus through the padforming material, after the mold sections are closed together in the molding position, thereby causing internal heating of the pad-forming material so as to rapidly cure it to a hardened condition after it has expanded to fill the molding chamber.

4,134,943

PRODUCTION OF POROUS TABLETS

Karl-Wolfgang Knitsch, Starnberg; Alexander Hagen, Tutzing; Eberhard Munz, Polling, and Helmut Determann, Starnberg, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Germany

Filed Dec. 3, 1976, Ser. No. 747,263

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1975, 2556561

Int. Cl.² A61J *3/10*

U.S. Cl. 264—28 **10 Claims**

1. A process for the production of porous tablets which are readily soluble in aqueous solutions, comprising mixing the tablet components which are readily soluble in aqueous solutions with a liquid solvent which is inert towards the components of the tablet and which freezes at a temperature from about −30 to +25° C, the solvent constituting about 5 to 80% by weight of the total mixture, introducing the mixture into an inert cooling medium at a temperature low enough to solidify the solvent, pressing the mixture including the solidified solvent into tablets at a temperature below the freezing point of the solvent, and then evaporating the solvent from the tablets.

4,134,944

PELLET-ROLLING METHOD

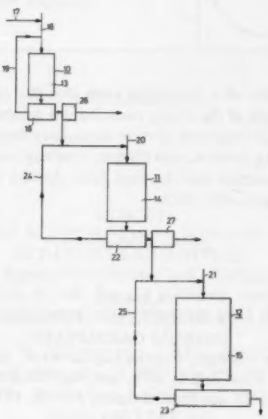
Pehr-Adrian Ilmoni, Enebyberg, and Roland Drugge, Malmberget, both of Sweden, assignors to Luossavaara-Kiirunavaara AB, Stockholm, Sweden

Filed May 25, 1977, Ser. No. 800,278

Claims priority, application Sweden, Jun. 2, 1976, 7606241

Int. Cl.² B01J *2/12*

U.S. Cl. 264—37 **14 Claims**



1. A method of manufacturing pellets from finely-divided moist material, particularly iron one concentrate, by rolling durable nuclei of substantially identical size in at least one pellet-rolling circuit in the presence of said finely-divided moist material, to form pellets having at least one layer of said material surrounding respective nuclei, said circuit including a rolling device and means for returning rolled pellets to said rolling device, wherein a predetermined substantially constant quantity of the pellets formed during a rolling operation, comprising those pellets which during said rolling operation have obtained a diameter larger than a predetermined value, is continuously removed as product pellets from said pellet-rolling circuit, while remaining pellets are returned to the rolling device of the circuit for renewed rolling therein, and wherein the mean size of the product pellets is adjusted to a desired substantially constant value by controlling the amount of nuclei supplied in relation to the amount of finely-divided moist material supplied and by simultaneously maintaining the total amount of material in the pellet-rolling circuit substantially constant.

4,134,945

METHOD AND APPARATUS FOR MAKING FOAM

Alan H. Milford, Hamden, and Oliver J. Proulx, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

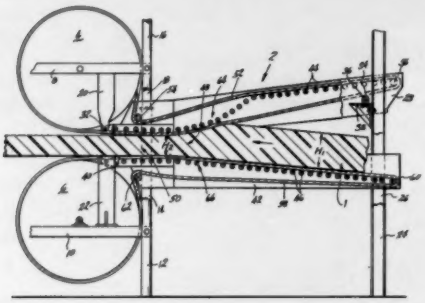
Filed Nov. 2, 1976, Ser. No. 738,262

Int. Cl.² B29C *15/00*; B29D *27/00*

U.S. Cl. 264—46.2 **16 Claims**

1. In an apparatus for making flexible densified polyurethane foam wherein a cellular polyurethane foam-forming reaction

mixture is allowed to rise and is crushed before being completely cured, the improvement comprising crush conveyor means for crushing said partially cured freely risen cellular foam as said foam is being conveyed, said conveyor means including an upper crushing portion of arcuate configuration



having a radius of a dimension such that the ratio of the arc radius to height of the freely risen foam is greater than 2.67 to 1, and a bottom crushing portion oppositely disposed from the upper crushing portion, said bottom crushing portion comprising a planar section and the final foam density is under about four pounds per cubic foot.

4,134,946

PROCESS FOR BRIQUETING FLUORSPAR WITH SODIUM CARBONATE

Antonio Novy Velinger, Concha Espina, 41-2°, Madrid, Spain

Filed Jul. 7, 1976, Ser. No. 703,298

Claims priority, application Spain, Jul. 15, 1975, 439,453

Int. Cl.[2] C04B *35/66*

U.S. Cl. 264—63 **4 Claims**

1. A process for briqueting fluorspar which comprises

thoroughly mixing fluorspar ore with about 5% of water and 2.5 to 3% of an agglomerating agent selected from the group consisting of sodium carbonate, potassium carbonate, sodium hydroxide and calcium hydroxide, based on the weight of the ore,

pressing the resultant mixture at a pressure of 300 to 600 Kg/cm^2, and

calcining the pressed product at a temperature of 700° to 880° C. for 5 minutes.

4,134,947

SINTERED SILICON NITRIDE BODY AND A METHOD OF PRODUCING THE SAME

Isao Oda, Nagoya, and Masayuki Kaneno, Tokoname, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

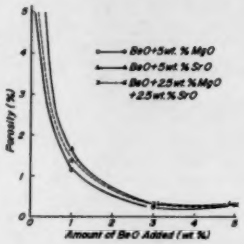
Filed Apr. 2, 1976, Ser. No. 672,928

Claims priority, application Japan, Apr. 7, 1975, 50-41164; Apr. 18, 1975, 50-46518

Int. Cl.[2] C04B *35/58*

U.S. Cl. 264—65 **10 Claims**

1. A method of producing a sintered silicon nitride body, comprising preparing a mixture of not more than 10% by weight in total of at least two metal oxides selected from the group consisting of beryllium oxide, magnesium oxide and strontium oxide, provided that each of said metal oxides is not more than 5% by weight, and the remainder being of silicon nitride powder, wherein said silicon nitride powder has an α-phase content of not less than 80% by weight, a purity of not less than 99% and a grain size of not more than 10 μm; molding said mixture into a shaped body and sintering the resulting



shaped body at a temperature of 1,600°–1,900° C. in nitrogen or inert gas atmosphere without hot-pressing.

4,134,948

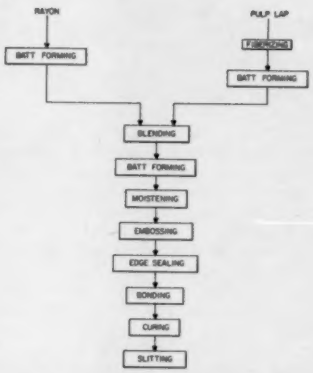
METHOD OF MAKING A NONWOVEN FABRIC

John H. Baker, Jr., Philadelphia, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 279,691, Aug. 10, 1972, abandoned, which is a division of Ser. No. 23,751, Mar. 30, 1970, abandoned. This application Apr. 16, 1975, Ser. No. 569,232

Int. Cl.[2] B29C *17/04*

U.S. Cl. 264—518 **5 Claims**



1. A method of manufacturing a nonwoven, self-sustaining absorbent fabric having the requisite cohesive strength, flexibility, absorbency and abrasion resistance to render it usable as a replacement for textile fabrics, said method including the sequential steps of:

(a) forming an air-suspension of fibers, over 50% of said fibers being the wood pulp fibers;

(b) directing said air-suspension of fibers toward an air-permeable forming surface to cause the air to pass through said forming surface and to deposit the fibers of said suspension on the forming surface in the form of a low integrity sheet of fibers disposed in a randomly arranged and intermingled fashion, said sheet having opposed major surfaces;

(c) adjusting the moisture level of the dry formed sheet so that it will retain an embossed pattern therein;

(d) embossing the sheet in a manner so as to form a plurality of spaced, highly compressed valley regions and spaced, high loft regions such that a quantity of adhesive, which, when applied to opposed surfaces of the sheet so as to leave interior portions of the high loft regions unbonded, will form adhesive networks extending completely through the sheet in the highly compressed valley regions, said embossing step forming the highly compressed valley

regions and high loft regions over substantially the entire extent of said sheet;

(e) applying said quantity of adhesive to the opposed major surfaces of the embossed sheet in a manner

(1) for interconnecting surface fibers of the sheet to stabilize substantially all of said surface fibers,

(2) for forming adhesive networks extending completely through the sheet over substantially the entire extent thereof in the highly compressed valley regions to enhance the peel and tensile strengths of said sheet, and;

(3) for forming bonded regions which partially penetrate through the sheet in the high loft regions to leave interior portions of said high loft regions unbonded by said adhesive and highly absorbent; and

(f) drying the sheet and setting the adhesive.

4,134,949

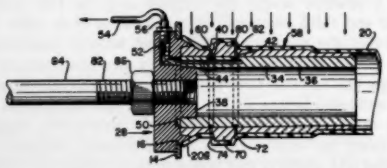
METHOD TO FORM A BELL END IN A PLASTIC PIPE

Jimmie R. McGregor, Mineral Wells, Tex., assignor to Harsco Corporation, Camp Hill, Pa.

Filed Feb. 17, 1977, Ser. No. 769,736

Int. Cl.[2] B29D *23/00*

U.S. Cl. 264—519 **3 Claims**



1. A method of forming a bell in the end of a plastic pipe comprising the steps of: heating the end of the plastic pipe to be formed; positioning a segmented mandrel shell having an outside diameter larger than the outside diameter of the plastic pipe over a mandrel core, said segmented mandrel shell having a first tapered shoulder adjacent a first end, a second tapered shoulder adjacent a second end, and an enlarged annular ridge formed between said first and second tapered shoulders; urging the heated end of the pipe over the segmented mandrel shell to move the end of the pipe past the first tapered shoulder to form a bell portion in the end of the pipe such that the inside diameter of the bell portion is substantially equal to the outside diameter of the pipe; urging the heated end of the pipe over the enlarged annular ridge to expand the end of the pipe; urging the end of the pipe into engagement with the second tapered shoulder to form a partial seal by further expanding the end of the pipe to form a cavity between the first and second tapered shoulders and around the annular ridge; drawing a vacuum through the segmented mandrel shell between the first and second tapered shoulders to evacuate air from the cavity on opposite sides of the enlarged annular ridge such that the interior wall of the plastic pipe is drawn against the surface of the segmented mandrel shell; cooling the end of the pipe; withdrawing the mandrel core from the plastic pipe with the segmented mandrel shell so that the mandrel core and mandrel shell may be separated; removing each segment of the segmented mandrel shell from the end of the plastic pipe by moving the segments toward the center of the pipe and withdrawing the segments one at a time.

3. A method of forming a bell in the end of a plastic pipe wherein the bell is formed around a segmented mandrel shell, comprising the steps of: positioning a mandrel core and mandrel base having a tapered shoulder through an aperture formed in a stripper plate, the aperture having a diameter which is less than the outside diameter of the end of a pipe positioned over the tapered shoulder; installing each of four shell segments on the mandrel core, said segments having an enlarged annular ridge formed thereon and a tapered shoulder adjacent the outer end of the shell segments adapted to flare the pipe to form a seal between the shell segments and a pipe; wedging the inner ends of the shell segments in an annular groove formed in the mandrel base to form a mandrel shell; heating the end of the plastic pipe until the pipe becomes soft and pliable; urging the heated end of the pipe over the mandrel shell to expand the pipe outwardly; pushing the end of the pipe past the enlarged annular ridge into engagement with the tapered shoulder on the mandrel base such that the end of the pipe is flared substantially outwardly into sealing relation with the tapered shoulder on the mandrel base and positioned adjacent the stripper plate; drawing a vacuum through passages adjacent opposite sides of the annular ridge to draw the interior wall of the pipe against the mandrel shell; cooling the end of the plastic pipe; withdrawing the mandrel core and base from the mandrel shell while movement of the pipe is restrained by the stripper plate; removing the shell segments one at a time by moving each segment to the center of the pipe and withdrawing the segment.

4,134,950

METHOD FOR BLOW MOLDING HOLLOW ARTICLES, IN PARTICULAR BOTTLES

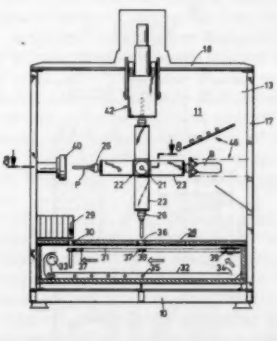
Adolf Appel, Egestorf-Nordheide, and Wolfgang Reymann, Hamburg, both of Fed. Rep. of Germany, assignors to Gildemeister Corpoplast GmbH, Hamburg, Fed. Rep. of Germany

Division of Ser. No. 728,809, Oct. 1, 1976, Pat. No. 4,046,498. This application Aug. 3, 1977, Ser. No. 821,278

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1975, 2545131

Int. Cl.[2] B29C *17/07*

U.S. Cl. 264—523 **4 Claims**

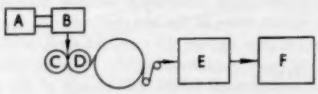


1. In a method of blow molding articles from blowable parisons by successive pre-heating, final heating and blowing steps performed on parisons at successive work stations concentrically arranged about a common center, at least one such station being located at a relatively greater distance from said center, the steps of supporting radial telescopic arms from a common shaft, rotating the shaft in stepwise fashion to align the arms in succession with successive work stations, supporting a parison at the end of each arm to transfer the parison between stations, coupling the arm at said at least one station to a fixed actuating means, and actuating the actuating means to telescopically extend the arm to position the arm end and the parison supported thereby at said at least one station.

4,134,951
PRODUCTION OF FILAMENTS

James Dow, Thaxted; Ronald Lloyd, Sawbridgeworth, and Albert G. Patchell, Welwyn Garden City, all of England, assignors to Smith & Nephew Polyfabrik Limited, Nelson, England

Continuation of Ser. No. 176,558, Aug. 31, 1971, abandoned, which is a continuation-in-part of Ser. No. 803,649, Mar. 3, 1964, abandoned. This application Feb. 23, 1977, Ser. No. 771,097
Int. Cl.[2] B32B 3/10
U.S. Cl. 264—147 28 Claims

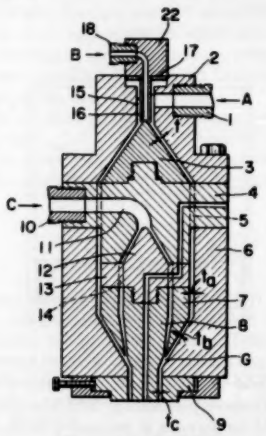


1. A process for the production of continuous filaments comprising passing a molten deformable polymeric material as a formed flat hot melt sheet into the nip formed between (a) at least one roller having a multiplicity of adjacent fine continuous circumferential grooves and (b) a second roller in pressure contact therewith, at least one of said rollers being maintained at a temperature below the temperature of the molten deformable polymeric material to effect cooling and simultaneously form and solidify said material into a flat body of material having parallel continuous ribs along its longitudinal axis; stretching the ribbed material in a direction substantially parallel to the ribs by an amount sufficient to orient the polymer; and splitting the material longitudinally between the ribs to form longitudinal filaments corresponding to said ribs.

4,134,952
METHOD AND DIE FOR FORMING LAMINATED TUBULAR STRUCTURES OF SYNTHETIC RESINS

Shinsuke Yoshikawa; Yuji Sawa, and Sigeru Endo, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 791,148
Claims priority, application Japan, Apr. 26, 1976, 51-46505
Int. Cl.[2] B29D 23/04
U.S. Cl. 264—173 10 Claims



1. A method of forming a laminated tubular structure which comprises: forcing and directing molten first and second resins to flow through respectively separate paths to the forward nose tip of a torpedo so disposed within a cavity within a die structure as to form a tubular first passage between said torpedo and the inner wall surface formed by said cavity, said torpedo having a substantially conical nose; directing said resins to merge at said forward nose tip and then flow confluently in a two-layer tubular state through said tubular first passage, said first and second resins respectively constituting the outer and inner layers of the two-layer tubular structure, said first and second resins in said two-layer tubular state, thus being forced initially to flow in a divergently expanding path along the outside of said conical nose of said torpedo toward the middle of the outside of said torpedo, thereby being rendered into uniform thin layers, and then to flow from the middle of the outside of said torpedo toward the other, downstream end of said torpedo; and extruding said thin layers, in said two-layer tubular state, through annular lips of said die structure downstream from the torpedo, thereby to form a two-layer laminated, tubular structure.

5. A die for extruding laminated tubular resinous structures, comprising an outer die structure having a cavity therewithin and a torpedo having a substantially conical nose with a nose tip at the forward, upstream end thereof and so disposed in said cavity as to form a tubular first passage between said torpedo and the inner wall surface formed by said cavity, the outer die structure having therein a second passage communicating with and extending from a first resin supply pipe outside of the die to said nose tip and functioning to conduct a molten first resin under pressure from the supply pipe to the nose tip, the die having therein a third passage communicating with and extending from a second resin supply pipe outside of the die to the nose tip and functioning to conduct a molten second resin under pressure from the second resin supply pipe to the nose tip at a position nearer the torpedo than the first resin, the second and third passages being coaxial to each other in the vicinity of the nose tip, the first and second resins thereby being forced to flow confluently in a two-layer tubular state through the tubular first passage to respectively constitute outer and inner layers, the layers of the first and second resins thus being forced initially to flow in a divergently expanding path along the conical nose of the torpedo, thereby being rendered into uniform thin layers to be extruded out of the die as a two-layer laminated tubular structure through annular lips of the die contiguous to the downstream end of the tubular first passage.

4,134,953
METHODS OF MAKING DUAL JACKETED CABLE

Matthew R. Dembiak, Clifton, N.J., and Wayne McC. Newton, Lilburn, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 655,360, Feb. 5, 1976, abandoned. This application Jun. 6, 1977, Ser. No. 803,908
Int. Cl.[2] H01B 13/10
U.S. Cl. 264—174 4 Claims

1. A method of making a cable having a core comprising a plurality of individually insulated conductors, which includes the steps of:

advancing a core, having a longitudinal centerline, along a path of travel;

applying a corrugated metallic strip having inwardly and outwardly facing major surfaces around the advancing core to form an overlapped seam with the inwardly facing major surface facing the core;

extruding a first polymeric material over the metallic strip in intimate contact with the outwardly facing major surface to form an inner jacket which covers the metallic strip and in which the distance from the longitudinal centerline of the core to an outwardly facing surface of the first polymeric material is at least slightly greater than the distance from the longitudinal centerline to the outermost portions of the corrugated metallic strip; and

extruding a second polymeric material over the first polymeric material to form an outer jacket, the second polymeric material being capable of withstanding temperatures of at least 212° F. without impairing the integrity of the cable and the first polymeric material having a critical notch depth ratio which is substantially greater than that

of the second polymeric material to maintain the structural integrity of the cable notwithstanding corrugation imprint of the first polymeric material by the corrugations of the metallic strip.

4,134,954

SPINNING PROCESS AND DEVICE WITH STATIC MIXING INSERTS

Dieter Brauner, Solingen-Wald; Hans J. Kaluza, Cologne, and Edgar Muschelknautz, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

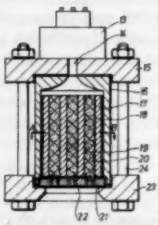
Continuation of Ser. No. 702,305, Jul. 2, 1976, abandoned. This application Jan. 27, 1978, Ser. No. 873,035

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532346

The portion of the term of this patent subsequent to Jul. 6, 1994, has been disclaimed.

Int. Cl.² D01D *1/06*

U.S. Cl. 264—176 F **4 Claims**



1. The process of spinning a spinning fluid which comprises pumping the fluid through a conduit opening into a housing having a static mixing apparatus arranged therein comprising a plurality of mixing inserts in the housing each consisting of a plurality of intersecting plates disposed cross-wise and inclined with respect to the longitudinal axis of the housing, each of said plates having a plurality of alternating webs and slots for mixing of the spinning fluid during passage thereof through the housing, the free spaces between the plates and portions of the mixing inserts surrounded by the housing being filled with packing material and a nozzle plate being arranged at the downstream end of the housing.

4,134,955

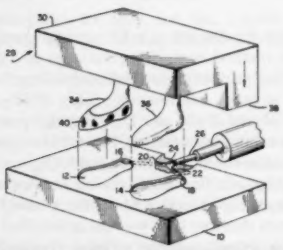
INJECTION MOLDING FOOTWEAR

James R. Hanrahan, Jr., Fairfield, Conn., and Richard G. Levine, Lawrence, N.Y., assignors to Air Industries, Concord, N.C.

Continuation of Ser. No. 666,251, Mar. 12, 1976, abandoned. This application Feb. 9, 1977, Ser. No. 767,048

Int. Cl.² B29C *5/00;* **B29D** *9/00;* **B29F** *1/10*

U.S. Cl. 264—244 **6 Claims**



1. In a process for producing footwear having a molded sole portion attached to a knitted fabric upper, wherein said upper is fitted over a last, the last and upper are clamped over the top of an open mold cavity, and a liquid thermoplastic material is injected into said cavity to form, upon cooling, said molded sole, the improvements comprising providing said upper with an attached, tightly woven insole portion smaller than said molded sole, said upper and last being dimensioned so as to require stretching of said upper over said last thereby creating openings between the stitches of said knitted upper, said insole portion preventing said thermoplastic from pushing said upper on said last.

4,134,956

METHOD OF FORMING A DECORATIVE LAYER ON A PRECAST CONCRETE BOARD

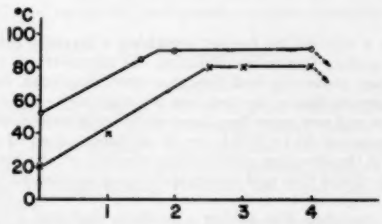
Yoshinori Suzuki, Tokyo; Akihiko Asayama, Kawasaki; Fumio Dohi; Takaharu Takahashi, both of Tokyo, and Isao Toyomoto, Hiratsuka, all of Japan, assignors to Kowa Chemical Industry Ltd., Japan

Continuation of Ser. No. 339,035, Mar. 8, 1975, abandoned. This application Jan. 8, 1975, Ser. No. 539,442

Claims priority, application Japan, Nov. 14, 1972, 47-113522

Int. Cl.² B28B *1/16*

U.S. Cl. 264—256 **10 Claims**



1. Method of forming a decorative coating on the surface of precast concrete board which comprises: pouring a concrete mixture consisting essentially of cement, aggregate and water into a mold, smoothing the surface of the resulting unhardened concrete, spraying an hydraulic coating material on the unhardened concrete having a good workability in the same mold at a coating density from about 4 to about 6 kg/m^2, and immediately thereafter heat-curing the so-coated concrete at a temperature between about 20° C and about 90° C for from about 3 to about 5 hours, said hydraulic coating material consisting essentially of a coating composition whose viscosity is between about 5,000 and 50,000 cps. and which is composed of (a) 100 parts by weight of Portland cement, (b) from about 2 to about 20 parts by weight of curing agent composition consisting essentially of at least one inorganic salt selected from the group consisting of alkali metal carbonate, alkaline earth metal carbonate, alkali metal chloride, alkaline earth metal chloride, and alkali metal silicate, and (c) an effective quantity of at least one additive selected from the group consisting of water proofing agent, cement dispersing agent, defoaming agent, crack-preventing agent, aggregate, coloring pigment and pigment-dispersing agent.

2. Method of forming a concrete coating on the surface of precast concrete board which comprises placing unhardened concrete consisting essentially of cement, aggregate and water in a mold, spraying a hydraulic coating material on the unhardened concrete in said mold at a coating density of from about 4 to about 6 kg/m^2, immediately thereafter heat-curing the so-coated concrete at a temperature between about 20° C and about 90° C for from about 3 to 5 hours, said hydraulic coating material consisting essentially of a coating composition whose viscosity is between about 5000 and 50,000 cps, and which is composed of (a) 100 parts by weight of Portland cement, (b) from about 2 to about 20 parts by weight of curing agent composition, said curing agent composition consisting essentially of at least one inorganic salt selected from the group consisting of alkali metal carbonate, alkaine earth metal carbonate, alkali metal chloride, alkaline earth metal chloride, and alkali metal silicate, and (c) an effective quantity of at least one additive selected from the group consisting of water proofing agent, cement dispersing agent, defoaming agent, crack-preventing agent, aggregate, coloring pigment and pigment-dispersing agent.

4,134,957

METHOD OF STRETCHING POLYPROPYLENE FILMS

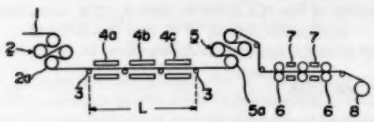
Shohei Yoshimura, and Tutomu Isaka, both of Inuyama, Japan, assignors to Toyobo Co., Ltd., Osaka, Japan

Continuation of Ser. No. 640,797, Dec. 15, 1975, abandoned, which is a continuation-in-part of Ser. No. 420,442, Nov. 30, 1973, abandoned, which is a continuation of Ser. No. 191,856, Oct. 22, 1971, abandoned. This application Feb. 16, 1978, Ser. No. 878,438

Claims priority, application Japan, Oct. 26, 1970, 45-94093

Int. Cl.[2] B29C *17/02*

U.S. Cl. 264—288 **15 Claims**



9. In a method for further stretching a biaxially oriented polypropylene film in one direction, the improvement which comprises conveying said film to a stretching zone, further stretching the film in one direction at a stretching ratio greater than one and mot more than three while being maintained at a temperature of 60 to 165° C. in the stretching zone having a length in the direction of stretching which is greater than the breadth of said film, said temperature being maintained in said film throughout the entire extent of said stretching zone, to give a stretched film having a uniform thickness which is substantially the same, or greater than, the thickness of the unstretched film, with all of the material originally present in the unstretched film being present in the stretched film, conveying the stretched film from the stretching zone to a heat-setting zone, and heating the stretched film in said heat-setting zone at a temperature above the second order transition point of the film but below the melting point thereof, the heat-setting step being conducted at a tension no greater than that required to avoid a slackening of the film, the ratio of the length of the stretching zone to the breadth of the film being greater than 1 to 500.

4,134,958

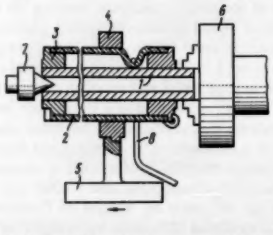
METHOD OF MANUFACTURING CORRUGATED TUBING OF POLYTETRAFLUORETHYLENE

Jury F. Dunichev, ulitsa Zamshina, 50, kv. 12; Anatoly S. Dushenkov, ulitsa Telmana, 52, kv. 191, and Arkady K. Pugachev, Oktyabrskaya naberezhnaya, 100, korpus 4, kv. 85, all of Leningrad, U.S.S.R.

Filed Oct. 5, 1977, Ser. No. 839,556

Int. Cl.[2] B29C *17/00*; B29F *5/00*

U.S. Cl. 264—320 **3 Claims**



1. A method of manufacturing corrugated tubing of polytetrafluorethylene consisting of slipping a plain tubular blank of polytetrafluorethylene on a cylindrical mandrel of a diameter ensuring that a clearance equal to the depth of corrugations to be formed is provided between said tubular blank and said mandrel; retaining said blank at its ends concentrically with said mandrel; winding a wire in a helical path around said blank slipped on said mandrel, said wire being applied under a tension causing the formation of said corrugations; before the zone wherein the corrugations are being formed retaining said blank at its outside surface concentrically with said mandrel by a retainer traveling over the surface of said blank at a rate equal to the rate of winding said wire around said blank and of forming and corrugations; and heat-treating the corrugations so formed at a temperature between 250 and 300° C.

4,134,959

AZOLE-PHOSPHATE CORROSION INHIBITING COMPOSITION AND METHOD

Russell O. Menke, Lindenhurst; Jose T. Jacob, Lake Zurich, and Chih M. Hwa, Palantine, all of Ill., assignors to Chemed Corporation, Cincinnati, Ohio

Continuation of Ser. No. 685,008, May 10, 1976, abandoned. This application Aug. 19, 1977, Ser. No. 826,009

Int. Cl.[2] C23F *11/14, 11/16*

U.S. Cl. 422—16 **1 Claim**

1. A method for preventing corrosion of steel in contact with an aqueous liquid consisting of maintaining in the aqueous liquid from 0.1 to 50,000 ppm of an azole compound selected from the group consisting of pyrazoles, imidazoles, isoxazoles, oxazoles, isothiazoles, thiazoles and mixtures thereof and from 0.1 to 50,000 ppm of water-soluble phosphate selected from the group consisting of phosphoric acid, trisodium phosphate, dipotassium phosphate, monosodium phosphate, disodium phosphate, and tripotassium phosphate.

4,134,960

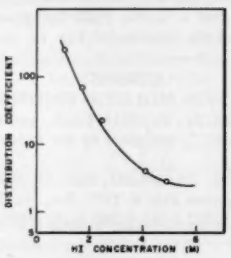
METHOD FOR DISSOLVING PLUTONIUM OXIDE WITH HI AND SEPARATING PLUTONIUM

Benedict L. Vondra; Othar K. Tallent, and James C. Mailen, all of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 1, 1977, Ser. No. 802,398

Int. Cl.[2] C01G *56/00*

U.S. Cl. 423—7 **11 Claims**



1. A method for dissolving solid material comprising PuO_2 and UO_2 said method comprising the steps of

(a) contacting said solid material comprising PuO_2 and UO_2 with an aqueous solution comprising HNO_3 to dissolve a portion of said PuO_2 and UO_2 thereby providing a first aqueous solution containing Pu and U values and a first solid residue containing PuO_2 and UO_2;

(b) contacting said first solid residue with an aqueous solution comprising at least 3 M HI for a time insufficient to completely dissolve UO_2 present in said first solid residue to form a second aqueous solution containing Pu and U values;

(c) evaporating said second aqueous solution containing Pu and U values to dryness leaving a second solid residue containing UO_2 and Pu and U values; and

(d) contacting said second solid residue with an aqueous solution greater than about 2 M in HNO_3 to provide a third aqueous solution containing Pu and U values.

5. A method for separating Pu values from U and other metal values comprising the steps of

(a) first providing an aqueous ion exchange feed solution 0.5–2 M in HI and containing Pu values, U values and other metal values;

(b) contacting said ion exchange feed solution with a sulfonic acid cation exchange resin to cause Pu values and a portion of said other metal values to load onto said resin;

(c) contacting said loaded resin with an aqueous solution at least 4 M in HI to preferentially elute Pu values from said loaded resin to provide an eluate solution substantially less concentrated in uranium and other metal values than said ion exchange feed solution.

4,134,961
PROCESS FOR THE DESULFURIZATION OF FLUE GASES

David Lurie, 539 Covington Pl., Wycoff, N.J. 07481

Filed May 20, 1976, Ser. No. 688,133

Int. Cl.² C01B *17/00, 17/16, 17/02*

U.S. Cl. 423—242 **19 Claims**

1. A continuous cyclic process for the desulfurization of a flue gas having a content of sulfur dioxide, which comprises: (1) scrubbing said flue gas with a recycled aqueous solution containing sodium aluminate and sodium hydroxide in about 1:1 to 1:2 Al_2O_3:Na_2O molar ratio, thereby removing substantially all of said sulfur dioxide from said gas and converting said solution into an underflow solution of sodium and aluminum sulfates and sulfites; (2) evaporating at least half the water in said underflow solution, thereby evolving sulfur dioxide therefrom, at least until evolution of sulfur dioxide therefrom has substantially ceased; (3) collecting said sulfur dioxide; (4) reducing said sulfates and sulfites to sulfides; (5) hydrolyzing said sulfides at a temperature above 30° C., thereby evolving hydrogen sulfide and forming an aqueous sodium aluminate-sodium hydroxide solution; (6) collecting said hydrogen sulfide; and (7) recycling said aqueous sodium aluminate-sodium hydroxide solution to said scrubbing step.

4,134,962
PRODUCTION OF PURE ALKALI METAL PHOSPHATE SOLUTIONS FROM WET-PROCESSED PHOSPHORIC ACIDS

Klaus-Peter Ehlers, Erftstadt-Lechenich, and Gero Heymer, Erftstadt-Liblar, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 23, 1977, Ser. No. 771,167

Claims priority, application Fed. Rep. of Germany, Feb. 27, 1976, 2608029

Int. Cl.² C01B *15/16, 25/26, 25/16*

U.S. Cl. 423—313 **5 Claims**

1. A process of preparing, from wet-processed phosphoric acid containing more than 400 ppm vanadium and more than 600 ppm chromium, alkali metal phosphate solutions containing less than 20 ppm vanadium and less than 1 ppm chromium based on P_2O_5 and having an alkali metal oxide to P_2O_5 ratio greater than 1.9:1, which comprises

(a) neutralizing the acid to an alkali metal oxide to P_2O_5 molar ratio of 1.0:1 to 1.8:1,

(b) separating the resulting precipitate,

(c) admixing the resulting solution with iron(II) salt at 60 to 90° C.,

(d) further neutralizing the acid to an alkali metal oxide to P_2O_5 molar ratio greater than 1.9:1, and

(e) separating the precipitate resulting in (d).

4,134,963
PRODUCTION OF LOW DENSITY GRANULAR SODIUM TRIPOLYPHOSPHATE

Raimond Pals, Howell, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 6, 1976, Ser. No. 748,003

Int. Cl.² C01B *15/16, 25/26*

U.S. Cl. 423—315 **4 Claims**

1. A process for preparing a granular sodium tripolyphosphate product of low frangibility and having a bulk density within the range of from about 0.45 g/cc to about 0.59 g/cc which comprises spraying water in an amount from about 36% to about 130% in excess of the amount stoichiometrically required for formulation of sodium tripolyphosphate hexahydrate, onto finely divided sodium tripolyphosphate feed material having a size distribution of at least 70% by weight −100 mesh and at least 95% by weight −50 mesh, to form an agglomerated product, calcining the agglomerated product at a temperature within the range of from about 320° C. to about 550° C., and recovering said granular sodium tripolyphosphate product.

4,134,964
PROCESS AND APPARATUS FOR PURIFYING WET-PROCESSED PHOSPHORIC ACID

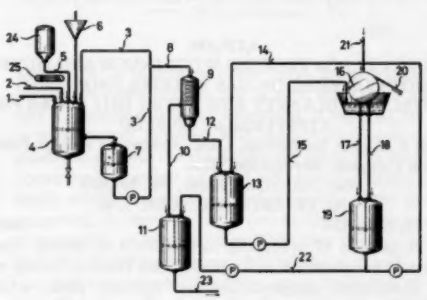
Klaus P. Ehlers, Erftstadt Lechenich, and Gero Heymer, Erftstadt Liblar, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 618,056, Sep. 30, 1975, abandoned. This application Jul. 13, 1977, Ser. No. 815,248

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1974, 2447390

Int. Cl.² C01B *25/18*

U.S. Cl. 423—321 R **9 Claims**



1. A process for purifying crude wet-processed phosphoric acid containing 45–55% P_2O_5 and several percent free sulphuric acid and further contaminants by adding to the phosphoric acid to be purified at an elevated temperature a calcium compound in equimolar proportions based on the sulphuric acid to precipitate the sulphuric acid in the form of calcium sulphate and avoid an excess of calcium; adding further to the phosphoric acid calcium sulphate seed crystals and at least one compound selected from the group consisting of alkali metal-, silicic acid and sulphidecompounds as precipitating agents for the further contaminants together with an adsorbent for organic contaminants; and separating the phosphoric acid so purified subsequently from solid matter present in the mixture obtained; adding to the crude wet-processed phophoric acid containing from 45 to 55 weight % of P_2O_5 in a reaction zone, at a temperature of 80 to 100° C, the calcium compound and the calcium sulphate seed crystals in the form of calcium sulphate semihydrate in the presence of the precipitating agents and active carbon as the adsorbent whereby easily filterable precipitates form; precipitating thereby the sulphuric acid in

the form of calcium sulphate semihydrate together with the further contaminants with the resultant formation of a first suspension, passing off the said first suspension from the reaction zone; recycling a portion of the first suspension to the reaction zone; separating the balance of the first suspension into purified phosphoric acid and solid matter; preparing from the solid matter an aqueous second suspension containing up to 30 weight % of phosphoric acid and converting the calcium sulphate semihydrate in the aqueous second suspension at 20° to 70° C into calcium sulphate dihydrate; separating the aqueous phase of the aqueous second suspension from the solid matter therein, and water-washing the separated solid matter, recycling a portion of the separated aqueous phase and a portion of the wash water, from preparing the afore-mentioned aqueous second suspension containing the calcium sulphate semihydrate and combining the balance of the aqueous phase and wash water with the purified phosphoric acid whereby the sulphuric acid content of the purified phosphoric acid is minimized.

4,134,965

CAUSTIC WASHED MOLECULAR SIEVES

Alan J. Rein, Bridgewater; David D. Saperstein, Mountainside, and Seemon H. Pines, Murray Hill, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 31, 1977, Ser. No. 829,327
Int. Cl.² C01B *33/28*
U.S. Cl. 423—328 **1 Claim**

1. The process for preparing caustic washed molecular sieves of type 3A or 4A of improved acid scavenging ability, which comprises slurrying the sieves with the appropriate aqueous 0.10–0.5N caustic solution, heating for ½–1 hour at 70°–100° C., filtering, washing until the pH of the wash water is 10–11 and drying to a loss on ignition value of between 2–8%.

4,134,966

CARBON BLACK PROCESS WITH INNER AND OUTER HOT COMBUSTION GAS ENTRIES PROVIDING PROTECTIVE BLANKET AND EXTRA HOT GASES FOR CONVERSION OF FEED

Oliver K. Austin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 29, 1976, Ser. No. 701,007
Int. Cl.² C01B *31/02*; C09C *1/48*
U.S. Cl. 423—456 **8 Claims**

1. A method of producing carbon black at carbon black formation temperatures in a carbon black furnace having air-fuel combustion gas-producing and injection pipes, which comprises tangentially introducing into one end of an elongated passageway having a hot zone, precombustion section, peripherally of the wall of said section a hot combustion gas to form an insulation blanket upon said wall with said gas so as to obtain a blanket of gas adjacent to said wall in said section, said blanket of gas being relatively cool with respect to a much hotter gas introduced tangentially also into said section, introducing a much hotter gas through a wall into said section at said end and to within said blanket in a manner that the said hotter gas is even at its introduction surrounded by said blanket so that the wall of said section of the passageway is protected against said hotter gas, introducing substantially axially into said elongated passageway at said end thereof into said section a make oil or gas directly into the body of said hotter gas, said hotter gas being at a temperature, quantity, and quality such that it can immediately and instantly operate on the make oil or gas which thus is instantly subjected to carbon black-forming conditions under which optimum quality and yield of carbon black are produced thereby producing the black without concern for the inner furnace wall because all of the same is protected at all times.

4,134,967

PROCESS FOR PREPARING ALKALI METAL MONO- AND DIBASIC PERIODATES

James E. Hillis, Angleton, and William P. Coker, Lake Jackson, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1977, Ser. No. 834,610
Int. Cl.² C01B *11/22*
U.S. Cl. 423—462 **6 Claims**

1. A process for preparing an alkali metal monobasic, dibasic periodate or mixtures thereof which comprises contacting an alkali metal tribasic, tetrabasic, pentabasic periodate or mixture thereof with a substance having a relative acidic value, pKa, of from about 3 to about 16 at a temperature of from about 0° C. to about 350° C. and a pressure of from about 1 atmosphere to about 100 atmospheres for a time sufficient to form said alkali metal monobasic, dibasic periodate or mixtures thereof and wherein the molar ratio of periodate:said substance is from about 1:1 to about 1:1000.

4,134,968

SINGLE PHASE WATER CONTAINING AEROSOL COMPOSITIONS

Malcolm R. D. Stebles, Maidenhead, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Feb. 10, 1977, Ser. No. 767,605
Claims priority, application United Kingdom, Feb. 18, 1976, 6410/76
Int. Cl.² A61K *7/11*
U.S. Cl. 424—47 **6 Claims**

1. An aerosol composition within an aerosol container comprising a liquid mixture of a hydrocarbon propellant, water and an organic solvent, wherein the liquid mixture forms a single phase and consists essentially of:

(a) about 5 to about 30% by weight of a hydrocarbon propellant to give a pressure within the aerosol container of 1.5 to 8.5 kg/cm² at 25° C.;

(b) about 5 to about 30% by weight of water;

(c) about 10 to about 40% by weight of a chlorinated solvent selected from the group consisting of methylene chloride and 1,1,1-trichloroethane; and

(d) about 37 to about 80% by weight of an alcohol selected from the group consisting of ethanol, n-propanol and iso-propanol.

6. A composition as claimed in claim 1 comprising additionally about 0.1 to about 7.5% by weight of a hairspray resin.

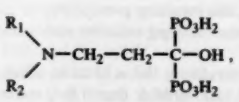
4,134,969

METHOD OF TREATMENT OF CALCIUM DISORDERS USING AMINOALKANE-DIPHOSPHONIC ACIDS

Manfred Schmidt-Dunker, Dusseldorf, Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Germany

Division of Ser. No. 529,039, Dec. 3, 1974, Pat. No. 3,962,432. This application Mar. 12, 1976, Ser. No. 672,561
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1974, 2405245
Int. Cl.² A61K *7/22*
U.S. Cl. 424—49 **4 Claims**

1. A method for inhibiting the abnormal deposition or dissolution of difficultly soluble calcium salts in the mouths of warm-blooded animals, which consists essentially in applying to the teeth of said animals a pharmacologically-acceptable amino-alkanediphosphonic acid derivative selected from the group consisting of (A) at least one aminoalkane-diphosphonic acid of the formula



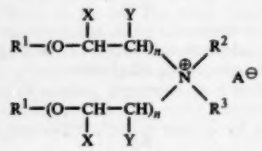
wherein R_1 and R_2 are each selected from the group consisting of hydrogen and alkyl having 1 to 3 carbon atoms, and (B) a pharmacologically-acceptable water-soluble salt of (A), said derivative being administered in the form of a dentifrice, an adherent paste, an aqueous solution, a losenge or a chewing gum containing an effective but toxicologically harmless amount therefor, in the range of about 0.01% to about 5% by weight, of said derivative.

4,134,970
QUATERNARY AMMONIUM COMPOUNDS AND THEIR USE IN HAIR CARE COMPOSITIONS

Hans L. Panke, Frankfurt am Main; Willi Steckelberg, Hofheim im Taunus; Jochen M. Quack, Kelkheim, and Alwin Reng, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 17, 1977, Ser. No. 807,403
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1976, 2628157
Int. Cl.[2] A61K *7/06, 7/08;* **C07C** *141/02, 87/30*
U.S. Cl. 424—70 **9 Claims**

1. Quaternary ammonium compounds of the formula



in which R^1 is saturated or unsaturated alkyl radical of 8 to 24 carbon atoms, a cyclohexyl radical or an aryl radical optionally substituted by alkyl groups, X and Y stand for a hydrogen atom or a methyl radical, however, X and Y not being methyl at the same time, n is an integer of from 1 to 20, R^2 and R^3 stand for an alkyl radical of 1 to 4 carbon atoms or a benzyl radical, and A represents the methosulfate ion, chloride or bromide.

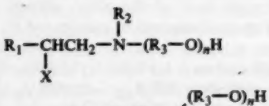
4. Method of use of the quaternary ammonium compounds as claimed in claim 1 as active ingredients in hair care compositions.

4,134,971
GERMICIDAL, DISINFECTING AND ANTISEPTIC COMPOSITIONS CONTAINING CERTAIN ALKOXY ALIPHATIC AMINE COMPOUNDS

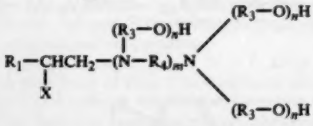
Shigeo Inoue, Sakura, and Mitsuo Kondo, Chiba, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1976, Ser. No. 661,139
Claims priority, application Japan, Feb. 25, 1975, 50/23283
Int. Cl.[2] A01N *11/00;* **A61L** *13/00;* **A01N** *9/20*
U.S. Cl. 424—128 **9 Claims**

1. A germicidal, disinfecting and antiseptic composition, comprising a synergistically effective amount of an alkoxy aliphatic amine compound represented by formula (I) or (II),



(I)



(II)

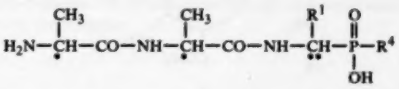
wherein R_1 represents alkyl or alkenyl having 8 to 18 carbon atoms, R_2 represents a hydrogen atom or alkyl having 1 to 3 carbon atoms, R_3 represents a hydrocarbon group having 2 to 3 carbon atoms, X represents a hydrogen atom or hydroxy, R_4 represents an alkyl group having 2 to 3 carbon atoms, n is 1 and m is 0 or an integer of 1 or 2, and a synergistically effective amount of an organic or inorganic compound capable of blocking metals selected from the group consisting of ethylenediamine tetracetic acid and alkali metal salts thereof, nitrilotriacetic acid and alkali metal salts thereof, malonic acid and alkali metal salts thereof, citric acid and alkali metal salts thereof, DL-aspartic acid and alkali metal salts thereof, acetyl acetone, 8-hydroxyguinoline, ϕ-phenanthroline, tripolyphosphoric acid and alkali metal salts thereof, pyrophosphoric acid and alkali metal salts thereof, and metaphosphoric acid and alkali metal salts thereof, said synergistically effective amounts being in a ratio of 0.1 to 10 m M of the metal blocking compound for every 10 to 1000 parts of the amine compound per million parts of the total composition.

4,134,972
COMPOSITIONS HAVING ANTIBIOTIC PROPERTIES

Frank R. Atherton, Welwyn Garden City; Michael J. Hall; Cedric H. Hassall, both of Welwyn; Peter S. Ringrose, Royston, and Robert W. Lambert, Welwyn, all of England, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 707,158, Jul. 21, 1976, Pat. No. 4,100,275, which is a continuation-in-part of Ser. No. 650,336, Jan. 19, 1976, Pat. No. 4,016,148. This application Nov. 11, 1977, Ser. No. 850,742
Int. Cl.[2] A61K *37/00, 31/54, 31/43*
U.S. Cl. 424—177 **7 Claims**

1. An antibacterial pharmaceutical composition containing (1) a peptide represented by the formula



wherein R^1 is hydrogen, lower alkyl, lower cycloalkyl, (lower cycloalkyl)-(lower alkyl), aryl, aryl-(lower alkyl), said R^1 substituents being substituted, if required, by one or more amino, hydroxy, thio, methyl thio, carboxy, or guanidino to form the characterizing group of a naturally occurring L α-amino acid; R^4 is hydroxy or methyl; the single asterisk denotes the L configuration at the carbon so marked; the double asterisk denotes the R configuration at the carbon so marked when R^1 is other than hydrogen, or a pharmaceutically acceptable salt thereof; and

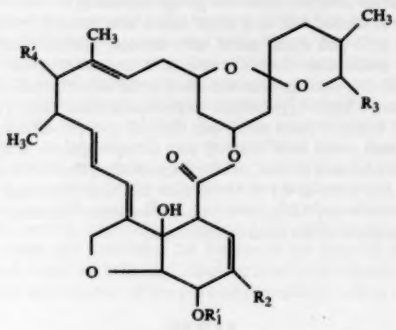
(2) an antibiotic selected from the group consisting of carbenicillin, ampicillin, penicillin G, sulbenicillin, [(R)-1-(2-furoyloxy)-3-methylbutyl]-penicillin,(6R)-6-[[(hexahydro-1H-azepin-1-yl)methylene]-amino]penicillanic acid,-(pivaloyloxy)methyl (6R)-6-[[(hexahydro-1H-azepin-1-yl)methylene]amino]penicillanate, phenethicillin, methicillin, propicillin, ticarcillin and amoxycillin arginine salt; wherein the weight ratio of the peptide or pharmaceutically acceptable salt thereof to said antibiotic is from 1:100 to 100:1.

4,134,973
CARBOHYDRATE DERIVATIVES OF MILBEMYCIN AND PROCESSES THEREFOR

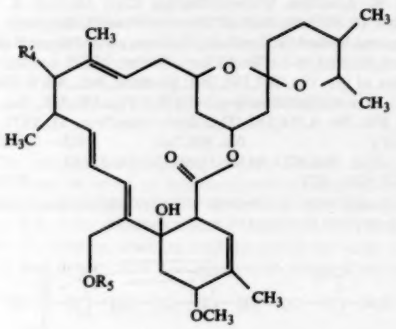
Michael H. Fisher, Bridgewater, and Richard L. Tolman, Berkley Heights, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 11, 1977, Ser. No. 786,157
Int. Cl.[2] A61K *31/71;* **C07H** *17/08*
U.S. Cl. 424—180 **6 Claims**

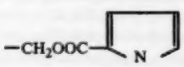
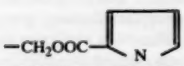
1. A compound having the formula:



or



wherein R_1', R_2 and R_3 have the following definitions:

R_1'	R_2	R_3
H or sugar	CH_3	CH_3
H or sugar	CH_3	C_2H_5
CH_3	CH_3	CH_3
CH_3	CH_3	C_2H_5
H or sugar		CH_3
H or sugar		C_2H_5

and independently, R_4' is hydrogen, hydroxy or a sugar connected to the substrate molecule through an oxygen atom; and R_5 is hydrogen or a sugar, provided at least one of R_1', R_4' or R_5 is a sugar and wherein the sugar is a mono-, di- or trisaccharide selected from glucopyranosyl, galactopyranosyl, mannopyranosyl, maltosyl, arabinopyranosyl, lyxopyranosyl, xylopyranosyl, ribopyranosyl, oleandrosyl, rhamnopyranosyl, fucopyranosyl, lactosyl, ribofuranosyl, mannofuranosyl, glucofuranosyl, arabinofuranosyl, mycarosyl, cladinosyl, desosaminosyl, damnosaminosyl, mycaminosyl.

6. A method for the treatment of parasitic infections, which comprises administering to an animal infected with parasites an effective amount of a compound of claim 1.

4,134,974

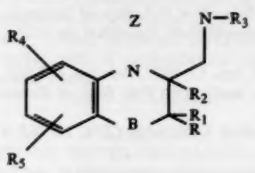
IMIDAZO[5,1-c][1,4]BENZOXAZIN-1-ONE

Piero Melloni, Bresso, Milan; Nicola Mongelli, Milan; Francesco Lauria, Milan; Alessandro Rossi, Milan, and Raffaele Tommasini, Milan, all of Italy, assignors to Carlo Erba S. p. A., Milan, Italy

Filed Dec. 8, 1976, Ser. No. 749,031
Claims priority, application Italy, Dec. 30, 1975, 30829 A/75
Int. Cl.[2] C07D *498/14;* A61K *31/535*
U.S. Cl. 424—248.54 65 Claims

1. Compound of the formula

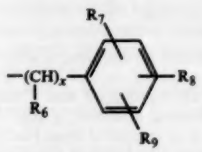
(I)



wherein

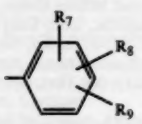
B is an oxygen atom;

R and R_1 are independently selected from the group consisting of hydrogen, C_1–C_6 alkyl and



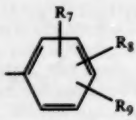
wherein x is zero or an integer of 1 to 6, R_6 is hydrogen or C_1–C_6 alkyl and R_7, R_8 and R_9 are independently selected from the group consisting of hydrogen, halogen, C_1–C_6 alkyl, C_1–C_6 trihaloalkyl, hydroxy, carboxy and one of the radicals $—OR_{10}$, $—SO_2R_{10}$ and $—COOR_{10}$, wherein C_1–C_6 alkyl;

R_2 is hydrogen, C_1–C_6 alkyl or



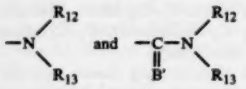
wherein R_7, R_8 and R_9 are as defined above; R_3 is hydrogen; carbamoyl; thiocarbamoyl; C_1–C_6 alkyl, C_2–C_6 alkenyl or C_2–C_6 alkynyl, each of the alkyl, alkenyl and alkynyl groups being unsubstituted or substituted by one or more substituents selected from the group consisting of (a) halogen; (b) carboxy; (c) hydroxy; (d) C_1–C_6 alkoxy; (e) one of the radicals $—SO_2R_{11}$, $—COOR_{11}$, and $—COR_{11}$, wherein R_{11} is C_1–C_6 alkyl or

wherein R_7, R_8 and R_9 are as defined above;



wherein R_7, R_8 and R_9 are as defined above;

(g) one of the radicals



wherein B' is an oxygen or sulfur atom and R_{12} and R_{13} are independently selected from the group consisting of hydrogen and C_1–C_6 alkyl; R_4 and R_5 are independently selected from the group consisting of hydrogen; halogen; amino; C_1–C_6 alkanoylamino; C_1–C_6 alkyl; C_1–C_6 trihaloalkyl; hydroxy; carboxy; C_1–C_6 alkoxy; R_{10}—SO_2—NH—, wherein R_{10} is as defined above; one of the radicals $-SO_2R_{11}$ and $-COOR_{11}$, wherein R_{11} is as defined above; or R_4 and R_5, taken together with two adjacent carbon atoms of the benzene ring, form a carbocyclic ring; Z is >C=B, wherein B is as defined above; as well as the pharmaceutically acceptable salts thereof.

2. A method of treating depression in a patient in need of such treatment, said method comprising administering to said patient a therapeutically effective amount of a compound of claim 1.

4,134,975

STIMULATING THE CENTRAL NERVOUS SYSTEM

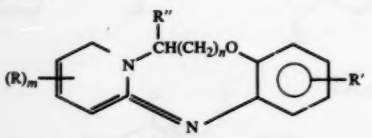
Harry L. Yale, New Brunswick, N.J., and Ramesh B. Petigara, Lansdale, Pa., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 347,939, Apr. 4, 1973, Pat. No. 3,856,801. This application Aug. 28, 1974, Ser. No. 501,324

Int. Cl.[2] A61K *31/44*

U.S. Cl. 424—263 **1 Claim**

1. A method of stimulating the central nervous system in a mammalian species comprising administering systemically to a mammalian host an effective amount of a compound of the formula



wherein m is 1 or 2

R is the same or different and is hydrogen, halogen (F, Cl, or Br), alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, alkylthio of from 1 to 4 carbons, benzyl, phenethyl, phenyl, phenoxy, phenylmercapto or mono-substituted phenyl wherein the substituent may be halogen (F, Cl, Br or I), alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, or trifluoromethyl; provided that when R is halogen, R occupies only the 3- or 5-position in the original 2-aminopyridine;

R' is hydrogen, halogen (F, Cl, Br or I), alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons, alkylmercapto of from 1 to 4 carbons, alkylsulfonyl wherein the alkyl radical has from 1 to 4 carbons, phenyl, phenyloxy, sulfamoyl, dialkylamidosulfonyl wherein each alkyl radical may have from 1 to 4 carbons, trifluoromethyl, mono-substituted phenyl or mono-substituted phenyloxy wherein the substituent may be halogen (F, Cl, Br or I), alkyl of from 1 to 4 carbons, alkoxy of from 1 to 4 carbons or trifluoromethyl; provided that R' occupies the position para to the carbon atom joined to oxygen when R' is alkylsulfonyl, sulfamoyl, dialkylamidosulfonyl, phenyl, phenoxy, mono-substituted phenyl or mono-substituted phenoxy;

n is 0 or 1;

and R'' is hydrogen or alkyl of from 1 to 4 carbons, or a pharmaceutically acceptable acid-addition salt thereof.

4,134,976

1,2-DIHYDRO-6-PHENYL-1H,4H-IMIDAZOBENZODIAZEPIN-1-ONES

John B. Taylor, Down Ampney, Nr. Cirencester, and Derek R. Harrison, Swindon, both of England, assignors to Roussel Uclaf, Paris, France

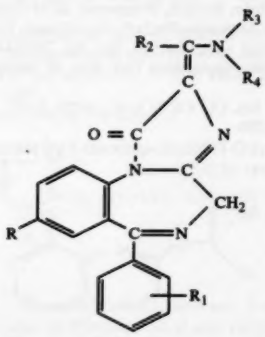
Division of Ser. No. 658,301, Feb. 17, 1976, Pat. No. 4,044,142. This application Apr. 28, 1977, Ser. No. 791,845

Claims priority, application United Kingdom, Feb. 15, 1975, 6509/75; Nov. 4, 1975, 45800/75

Int. Cl.[2] A61K *31/415*; C07D *471/04*

U.S. Cl. 424—267 **14 Claims**

1. A compound selected from the group consisting of 1,2-dihydro-6-phenyl-1H,4H-imidazo-[1,2-a][1,4]-benzodiazepin-1-ones of the formula



wherein R is selected from the group consisting of hydrogen, halogen, nitro and trifluoromethyl, R_1 is selected from the group consisting of hydrogen and halogen, R_2 is selected from the group consisting of hydrogen and methyl and R_3 and R_4 are individually selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, hydroxyalkyl of 1 to 5 carbon atoms, aminoalkyl of 1 to 5 carbon atoms, mono- and dialkylaminoalkyl with each alkyl having 1 to 5 carbon atoms, cyclo alkyl of 3 to 8 carbon atoms and phenyl or R_3 and R_4 together with the nitrogen atom to which they are attached form a saturated heterocycle selected from the group consisting of pyrrolidinyl and piperidino optionally substituted with alkyl of 1 to 5 carbon atoms and their non-toxic, pharmaceutically acceptable acid addition salts.

14. A method for the treatment of states of agitation, insomnia and certain psychosomatic syndromes in warm-blooded animals comprising administering to warm-blooded animals an effective amount of at least one compound of claim 1.

4,134,977
METHOD FOR PRODUCING INSECT-COMBATTING DEVICE

Jack Greenberg, Richmond, Va., assignor to A. H. Robins Company, Incorporated, Richmond, Va.

Continuation-in-part of Ser. No. 812,334, Jul. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 740,671, Nov. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 627,671, Oct. 31, 1975, Pat. No. 3,996,348, which is a continuation-in-part of Ser. No. 417,704, Nov. 20, 1973, Pat. No. 3,918,407. This application Sep. 26, 1977, Ser. No. 836,718

Int. Cl.[2] A61K *31/74;* A01N *9/36*

U.S. Cl. 424—78 **13 Claims**

1. In a process for forming a shaped body of a mixture of from about 20 to about 80 weight percent of a polyvinyl chloride resin; from about 5 to 35 weight percent of naled; from about 0.8 to about 5 weight percent of a surface porosity control component that is non-reactive in the mixture and has a boiling point at or below the curing temperature of the polyvinyl chloride to produce surface openings in communication with pores in said body by vaporization of said porosity control component during curing to provide for release of naled gas at a rate effective to control insects in the vicinity of said body, but insufficient to form as spew on the body; and finely divided silica particles, the improvement comprising extruding said mixture in an extruder, all of the surfaces thereof which contact said mixture being formed of an acid-resistant material.

4,134,978
O-ALKYL-O-[8-CHLORO-QUINOXAL-2-YL]-THIONOALKANEPHOSPHONIC ACID ESTERS

Karl-Julius Schmidt; Hellmut Hoffmann, both of Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wilhelm Stendel, Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

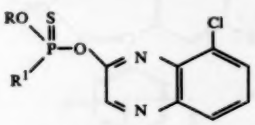
Filed Apr. 12, 1977, Ser. No. 786,914

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616091

Int. Cl.[2] C07D *9/65;* A01N *9/36*

U.S. Cl. 424—200 **9 Claims**

1. An O-alkyl-O-[8-chloro-quinoxal-2-yl]-thionoalkanephosphonic acid ester of the formula



in which

R and R^1 each independently is alkyl with 1 to 6 carbom atoms.

4,134,979
O-ALKYL-S-N-PROPYL-N-SULFONYL-PHOSPHORIC ACID ESTER AMIDES

Shigeo Kishino; Junichi Saito; Akio Kudamatsu; Kozo Shiokawa, and Shinichi Tsuboi, all of Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

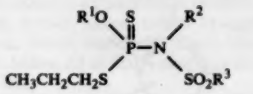
Filed Sep. 16, 1976, Ser. No. 723,834

Claims priority, application Japan, Sep. 22, 1975, 50-113705

Int. Cl.[2] A01N *9/36;* C07F *9/24*

U.S. Cl. 424—215 **6 Claims**

1. An O-alkyl-S-n-propyl-N-sulfonyl-phosphoric acid ester amide of the formula



(I)

in which

R^1 is methyl or ethyl,

R^2 is C_1–C_6 alkyl or alkenyl, C_1–C_6 alkyl substituted by aryl, phenyl, C_1–C_6 alkylphenyl, or halophenyl, and

R^3 is C_1–C_6 alkyl, C_1–C_6 alkyl substituted by halogen, phenyl, C_1–C_6 alkylphenyl, C_1–C_6 alkoxyphenyl, halophenyl, or nitrophenyl.

2. A method of combating insects, acarids or nematodes, which comprises applying to the insects, acarids, or nematodes, or to a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,134,980
PHENYLALKYLAMINO-ALKYL DERIVATIVES OF QUINAZOLINONE AND PHTHALAZINONE

Wolfgang Eberlein; Volkhard Austel, both of Biberach; Joachim Heider; Jurgen Dammgen, both of Warthausen; Rudolf Kadatz, Biberach, all of Fed. Rep. of Germany; Christian Lillie, and Walter Kobinger, both of Vienna, Austria, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Fed. Rep. of Germany

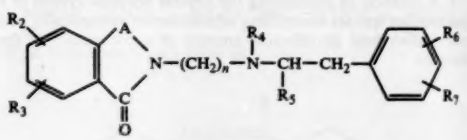
Filed Aug. 24, 1977, Ser. No. 827,142

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639291

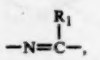
Int. Cl.[2] C07D *237/32, 239/72*

U.S. Cl. 424—250 **7 Claims**

1. A compound of the formula



wherein A is



where R_1 is hydrogen or alkyl of 1 to 3 carbon atoms;

R_2 is alkoxy of 1 to 3 carbon atoms;

R_3 is alkoxy of 1 to 3 carbon atoms or, together with R_2, methylenedioxy or ethylenedioxy;

R_4 is hydrogen, alkyl of 1 to 3 carbon atoms or benzyl;

R_5 is hydrogen or alkyl of 1 to 3 carbon atoms;

R_6 is hydrogen or alkoxy of 1 to 3 carbon atoms;

R_7 is alkoxy of 1 to 3 carbon atoms or, together with R_6, methylenedioxy or ethylenedioxy; and

n is 2 or 3;

or a non-toxic, pharmacologically acceptable acid addition salt thereof.

7. The method of reducing the heart rate in a warm-blooded animal in need thereof, which comprises perorally, parenterally or rectally administering to said animal an effective amount of a compound of claim 1.

4,134,981
PYRIMIDAL [2,3,D]PYRIMIDIN-4(3H)-ONES AS ANTIALLERGY AGENTS

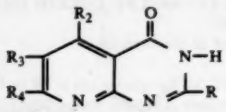
Thomas H. Althuis, Groton; Leonard J. Czuba, New London; Hans-Jurgen E. Hess, Old Lyme, and Saul B. Kadin, New London, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 786,185, Apr. 11, 1977, which is a division of Ser. No. 667,515, Mar. 16, 1976, Pat. No. 4,044,134, which is a division of Ser. No. 485,945, Jul. 5, 1974, Pat. No. 3,974,161, which is a continuation-in-part of Ser. No. 444,138, Feb. 20, 1974, abandoned, which is a continuation-in-part of Ser. No. 351,025, Apr. 13, 1973, abandoned. This application Oct. 27, 1977, Ser. No. 845,816

Int. Cl.[2] A61K *31/435;* C07D *471/04*

U.S. Cl. 424—251 16 Claims

1. A compound selected from the group consisting of



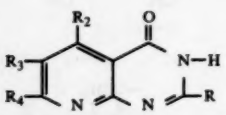
and the pharmaceutically-acceptable cationic salts thereof wherein R is selected from the group consisting of methyl, ethyl, acetyl and COR* wherein

R^O is selected from the group consisting of hydroxy, alkoxy having 1 to 4 carbon atoms, hydroxyalkoxy having 2 to 4 carbon atoms, amino and hydroxyamino;

each of R_2, R_3 and R_4 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halo, benzyloxy, hydroxy, thiol, alkanoyloxy having 1 to 4 carbon atoms, benzylthio, benzoyloxy, benzylsulfinyl, methylthio and methylsulfinyl and

R_2 and R_3, and R_3 and R_4 when taken together are selected from the group consisting of methylenedioxy and ethylenedioxy.

8. The method of controlling allergic symptoms in a mammalian subject which comprises adminstering to the subject an allergy symptom controlling amount of a compound selected from the group consisting of



and the pharmaceutically-acceptable cationic salts thereof wherein

R is selected from the group consisting of methyl, ethyl, acetyl, and -COR^O wherein R^O is selected from the group consisting of hydroxy, alkoxy having 1 to 4 carbon atoms. hydroxyalkoxy having 2 to 4 carbon atoms, amino and hydroxyamino;

each of R_2, R_3 and R_4 is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, halo, benzyloxy, hydroxy, thiol, alkanoyloxy having 1 to 4 carbon atoms, benzylthio, benzylsulfinyl, benzoyloxy, methylthio, and methylsulfinyl and

R_2 and R_3, and R_3 and R_4 when taken together are selected from the group consisting of methylenedioxy and ethylenedioxy.

4,134,982
ANTIPSYCHOTIC 1-[4,4-BIS(4-FLUOROPHENYL) BUTYL]-4-PHENOXY-1,2,3,6-TETRAHYDROPYRIDINES

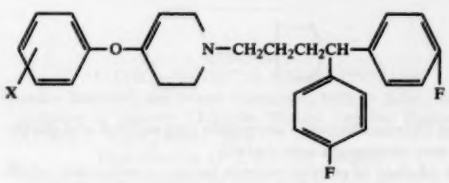
Lawrence D. Wise, Ann Arbor, Mich.; Patrick F. Flynn, Wilmington, Del., and Glenn C. Morrison, Ann Arbor, Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 26, 1977, Ser. No. 836,867

Int. Cl.[2] A61K *31/44;* C07D *211/74, 213/69*

U.S. Cl. 424—263 36 Claims

20. A method for treating the manifestations of psychotic disorders in mammals which comprises the administration of a psychotherapeutically effective amount of a member selected from the group consisting of compounds of the formula:



I

wherein X is hydrogen, halogen, dihalogen, trifluoromethyl, lower alkoxy, nitro, amino, cyano, lower alkyl, phenyl or phenyl substituted by halogen, dihalogen, lower alkyl, lower alkoxy, nitro, cyano, amino or trifluoromethyl; and the corresponding non-toxic, pharmaceutically acceptable acid salts and the N-oxides thereof.

4,134,983
3-AMINO-2-OR-PROPOXYARYL SUBSTITUTED IMIDAZOLES

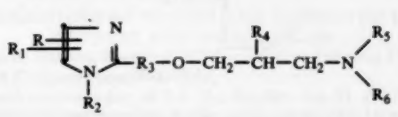
John J. Baldwin, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 554,372, Mar. 3, 1975, abandoned. This application Dec. 17, 1975, Ser. No. 641,420

Int. Cl.[2] A61K *31/445, 31/415;* C07D *233/64*

U.S. Cl. 424—267 37 Claims

1. Compound having the formula

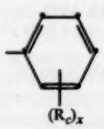


wherein

R and R_1 are independently selected from hydrogen, C_1–C_{10} linear or branched alkyl and substituted C_1–C_{10} linear or branched alkyl having 1-3 substituents selected fromhalo, hydroxy or C_1–C_4 alkoxy.

R_2 is hydrogen, C_1–C_{10} linear or branched alkyl, or C_3–C_6 alkenyl,

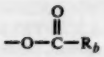
R_3 is selected from naphthyl and phenyl having the formula



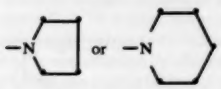
R_c is selected from halogen, lower-C_1–C_4 linear or branched alkyl, C_3–C_6 cycloalkyl, C_1–C_4 alkoxy, hydroxy, cyano and phenyl, and

x is 0, 1, 2, 3, or 4,

R_4 is hydroxy or



wherein R_b is C_1–C_6 linear or branched alkyl, and
R_5 and R_6, when separate, are independently selected from hydrogen, C_3–C_6 cycloalkyl, C_1–C_6 linear or branched alkyl and monosubstituted C_1–C_6 linear or branched alkyl wherein the substituent; is phenyl provided that when one of R_5 and R_6 is said substituted alkyl group, the other is hydrogen and when joined together with the N atom form



and pharmacologically acceptable acid addition and quaternary ammonium salts thereof.

32. Method of treating animals having hypertension which comprises administering an antihypertensive amount of compound of claim 1.

4,134,984

THIAZOLE COMPOSITIONS

Roger Crossley, Reading, England, assignor to John Wyeth & Brother Limited, Maidenhead, England

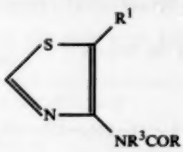
Filed Nov. 10, 1976, Ser. No. 740,634

Claims priority, application United Kingdom, Nov. 18, 1975, 47481/75; May 28, 1976, 22479/76

Int. Cl.[2] A61K *31/425;* **C07D** *277/38*

U.S. Cl. 424—270 **17 Claims**

1. A pharmaceutical composition in oral dosage form for use in the treatment of ulcers or hypersecretion comprising a therapeutically effective amount of a compound of formula I



(I)

where R^1 is hydrogen, alkyl of 1–6 carbon atoms, or phenyl, R is hydrogen, n-alkyl of 1–4 carbon atoms, which may be substituted by chlorine, or cyclopropyl, R^3 is hydrogen or COR^4 where R^4 is as defined for R and R and R^4 may be the same or different and a pharmaceutically acceptable carrier.

4,134,985

5-CYCLOPROPANE CARBOXYLATE OXADIAZOLES AS INSECTICIDES AND ACARICIDES

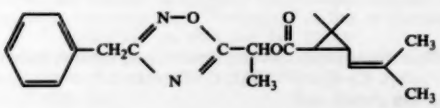
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed May 13, 1977, Ser. No. 796,777

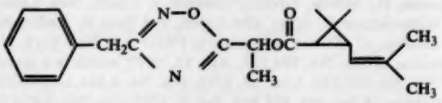
Int. Cl.[2] A01N *9/22;* **C07D** *271/06;* **A01N** *9/28*

U.S. Cl. 424—272 **3 Claims**

1. The compound of the formula



3. The method of controlling insects comprising applying to the habitat thereof an insecticidally effective amount of a compound of the formula



4,134,986

POLYOXYGENATED LABDANE DERIVATIVES

Balbir S. Bajwa, Bombay; Sujata V. Bhat, Thana; Horst Dornauer, and Noel J. de Souza, both of Bombay, all of India, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

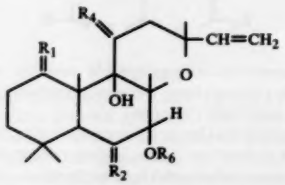
Filed Apr. 15, 1977, Ser. No. 787,961

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654796

Int. Cl.[2] A61K *31/35;* **C07D** *311/74*

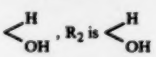
U.S. Cl. 424—283 **7 Claims**

1. A compound of the formula



stereoisomers thereof, and acid addition salts of such a compound having a basic group, wherein R_1, R_2, R_4 are the same or different and are oxygen or

wherein R_6 is hydrogen, alkyl having up to 6 carbon atoms, dialkylaminoalkyl or phenalkyl in which the alkyl has at most 4 carbon atoms, benzoyl, alkanoyl having up to 10 carbon atoms, alkoxycarbonyl having from 2 to 10 carbon atoms, or phenylaminocarbonyl, excepting those two compounds in which, simultaneously, R_4 is oxygen, R_1 is



and R_6 is

or in which R_4 is oxygen, R_1 is

R_2 is

and R_6 is hydrogen.

6. A pharmaceutical composition for the treatment of heart

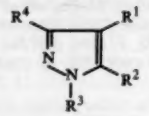
and circulatory disease which comprises an effective amount of a compound as in claim 1 in combination with a pharmaceutically acceptable carrier.

4,134,987
COMPOUNDS AND COMPOSITIONS

John L. Huppatz, 15 Schumack St., Weetan gera, Australian Capital Territory, Australia

Filed Jan. 3, 1977, Ser. No. 756,069
Claims priority, application Australia, Jan. 14, 1976, 4527/76
Int. Cl.[2] A01N *9/22*
U.S. Cl. 424—273 P 16 Claims

1. A process of combatting undesired fungal infestations in plants which process comprises applying to said plants, to the locus of said plants or to plant seeds prior to sowing, a fungicidally effective amount of a compound of the formula



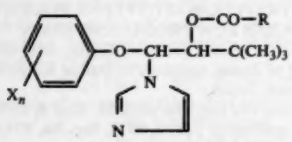
wherein either R^1 or R^2 is the group —$CONHR^5$ in which R^5 is phenyl or phenyl substituted with one, two or three substituents which are independently chosen from the group consisting of alkyl, alkoxy, halogen, trifluoromethyl, nitro and cyano; R^3 is chosen from the group consisting of hydrogen, alkyl, hydrofyolkyl, phenyl and —CH_2COOR^6 wherein R^6 is alkyl; R^4 and R^1 or R^2, whichever is not —$CONHR^5$, are chosen from the group consisting of hydrogen, halogen and alkyl provided that when R^1 is —$CONHR^5$, then R^2 and R^4 are not both hydrogen, and when R^2 is —$CONHR^5$ then R^1 and R^3 are not both hydrogen.

4,134,988
2-ACYLOXY-1-PHENOXY-1-IMIDAZOLYL-(1)-3,3-DIMETHYL-BUTANES

Wolfgang Krämer; Karl H. Büchel, both of Wuppertal; Wilhelm Brandes, Cologne, and Paul-Ernst Frohberger, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 28, 1977, Ser. No. 763,465
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 2604761
Int. Cl.[2] A61K *31/415;* C07D *233/60*
U.S. Cl. 424—273 R 10 Claims

1. A 2-acyloxy-1-phenoxy-1-imidazolyl-(1)-3,3-dimethylbutane of the formula



in which

R is alkyl with 1 to 8 carbon atoms, alkenyl or alkynyl with 2 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, haloalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms; phenyl or phenoxyalkyl (the alkyl moiety having 1 or 2 carbon atoms), the phenyl or phenoxy being optionally substituted by halogen, amino, cyano, nitro or alkyl with 1 or 2 carbon atoms; alkylamino or dialkylamino with 1 to 4 carbon atoms in each alkyl; or phenylamino optionally substituted by halogen, nitro or cyano;

X is halogen, amino, cyano, nitro, alkyl with 1 to 4 carbon atoms, cycloalkyl with 5 to 7 carbon atoms, alkoxy with 1 or 2 carbon atoms, haloalkyl with 1 or 2 carbon atoms and 1 to 5 halogen atoms, alkylthio with 1 or 2 carbon atoms, or alkoxycarbonyl with a total of up to 5 carbon atoms; phenyl or phenoxy optionally substituted by halogen, amino, cyano, nitro or alkyl with 1 or 2 carbon atoms; or phenylalkyl (having 1 or 2 carbon atoms in the alkyl moiety) optionally substituted in the phenyl by halogen, nitro or cyano and optionally substituted in the alkyl by alkylcarbonyloxy with a total of up to 3 carbon atoms; and

n is 0 or an integer from 1 to 5,

or a salt thereof with a physiologically tolerated acid.

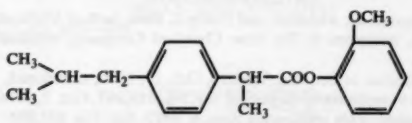
9. A method of combating plant fungus or bacteria pests which comprises applying to plants, seed or soil a fungicidally or bactericidally effective amount of a compound according to claim 1.

4,134,989
GUAIACOL p-ISOBUTYL HYDRATROPATE

Leandro Baiocchi, and Bruno Silvestrini, both of Rome, Italy, assignors to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Filed Jun. 24, 1977, Ser. No. 809,833
Claims priority, application Italy, Jul. 9, 1976, 25174 A/76
Int. Cl.[2] C07C *69/76*
U.S. Cl. 424—308 2 Claims

1. Guaiacol p-isobutyl hydratropate of the formula



(I)

2. A process for the treatment of inflammatory conditions of the respiratory tract of a human comprising the administration to said human of guaiacol p-isobutyl hydratropate of the formula I as defined in claim 1 at a daily dose in the range of 0.5 to 2.5 g.

4,134,990
COMPOSITIONS OF MATTER AND METHOD OF USE TO TREAT ARTHRITIC DISEASE

Adolph E. Sloboda, Rockland, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 814,604, Jul. 11, 1977, abandoned, which is a continuation-in-part of Ser. No. 757,280, Jan. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 664,470, Mar. 8, 1976, abandoned. This application Nov. 22, 1977, Ser. No. 853,942
Int. Cl.[2] A61K *31/275*
U.S. Cl. 424—304 6 Claims

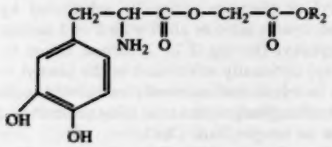
1. The method of inhibiting the progression of arthritis in a mammal which comprises administering to said mammal an effective amount of an active ingredient selected from the group consisting of benzimidoylacetonitrile, p-fluorobenzimidoylacetonitrile and mixtures thereof.

4,134,991
DERIVATIVES OF 2-(3-PHENYL-2-AMINOPROPIONYLOXY)-ACETIC ACID

Camille G. Wermuth, Strasbourg, France, assignor to Synthelabo, Paris, France

Filed Sep. 26, 1977, Ser. No. 836,724
Claims priority, application France, Sep. 28, 1976, 76 29057
Int. Cl.[2] A61K *31/24;* C07C *101/20*
U.S. Cl. 424—309 10 Claims

1. A compound of the formula



wherein R_2 is a phenylethyl or C_1–C_{16} alkyl, or a pharmaceutically acceptable acid addition salt thereof.

6. A method of treating Parkinson's disease which comprises administering to a patient suffering from Parkinson's disease an effective amount of a compound of claim 1 for the treatment of Parkinson's disease.

9. A pharmaceutical composition for the treatment of Parkinson's disease in dosage unit form suitable for oral administration which comprises from 0.100 to 0.800 gm of a compound of claim 1 and a pharmaceutically acceptable carrier therefor.

4,134,992

NAPHTHALENE ACETAMIDINES AS ANXIOLYTIC ANTIDEPRESSANTS

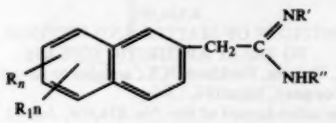
Abdulmuniem H. Abdallah, and Philip J. Shea, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 736,012, Oct. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 510,957, Oct. 2, 1974, abandoned. This application Aug. 4, 1977, Ser. No. 821,886

Int. Cl.[2] A61K *31/155*

U.S. Cl. 424—326 **14 Claims**

1. A method useful for alleviating symptoms of central nervous system depression and anxiety in an animal comprising administering to the animal an amount of a substituted amidine or a pharmacologically-acceptable salt thereof effective to alleviate said symptoms, the substituted amidine corresponding to the formula:



wherein R and R_1 each independently represent halo, lower alkyl or lower alkoxy; n independently in each occurrence represents zero or one; and R′ and R″ each independently represent loweralkyl.

4,134,993

BENZOPHENONE DERIVATIVES

Delme Evans, Chalfont St. Peter; John C. Saunders, Maidenhead, and William R. N. Williamson, Slough, all of England, assignors to Eli Lilly and Company, Indianapolis, Ind.

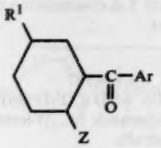
Filed Oct. 11, 1977, Ser. No. 840,882

Claims priority, application United Kingdom, Oct. 14, 1976, 42682/76

Int. Cl.[2] A01N *9/24*; C07G *49/76*

U.S. Cl. 424—331 **10 Claims**

1. A method of treating asthma which comprises administering to an animal suffering from or susceptible to asthma a chemotherapeutically effective amount of a compound of formula (I)



(I)

wherein R^1 is C_{1-4} alkyl; Z is SH, SR^2, SOR^2 or SO_2R^2, where R^2 is C_{1-4} alkyl; and Ar is phenyl or phenyl substituted by from one to three groups selected from halogen and methyl.

4,134,994

AMINE SALTS OF TERTIARY AMINO ACIDS

Ibrahim S. Bechara, Boothwyn; Philip J. Zaluska, Glen Riddle, and Rocco L. Mascioli, Media, all of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 1, 1976, Ser. No. 746,313

Int. Cl.[2] C07C *101/20*; C08G *18/18*

U.S. Cl. 260—501.11 **10 Claims**

1. An amine salt of a tertiary amino acid represented by the formula:

wherein in the formula

R_1 and R_2 independently are alkyl, hydroxy substituted alkyl groups having from 1 to 15 carbon atoms, or lower alkanol groups having from 2 to 4 carbon atoms;

wherein R_5 is hydrogen, a lower alkyl group having from 1 to 6 carbon atoms, an alkenyl group having from 2 to 6 carbon atoms, an aryl group, a cycloaliphatic or alkyl substituted cycloaliphatic group with the alkyl portion having from 1 to 6 carbons, or a keto alkyl group with the alkyl portion having from 1–6 carbon atoms;

wherein R_6 is hydrogen, or a radical selected from the group consisting of alkyl, phenyl, and a napthyl groups;

wherein X is an amine salt of a carboxylic acid group;

wherein Y is a carboxylic acid group, or an amine salt of a carboxylic acid group;

wherein q is 0 or 1; wherein p is 1 or 2; wherein s is 0 or 1; and wherein $p + q + s$ is 3.

4,134,995

MODIFIED TETRAFLUOROETHYLENE POLYMER AND PROCESS FOR PRODUCING SAME

Syozo Fumoto, Suita; Tetsuo Shimizu, Osaka, and Shigeru Ichiba, Kyoto, all of Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 682,593, May 3, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,422

Int. Cl.[2] C08L *27/04, 27/18*

U.S. Cl. 260—884 **2 Claims**

1. In a process for polymerization of tetrafluoroethylene with a copolymerizable modifier in an aqueous medium containing a polymerization initiator and a dispersant to produce a modified tetrafluoroethylene polymer containing 0.001 to 2 wt.% of the copolymerizable modifier based on the weight of the polymer, a process for producing the modifier tetrafluoroethylene polymer characterized in that:

(1) chlorotrifluoroethylene is used as said copolymerizable modifier,

(2) at least 50 wt.% of the copolymerizable modifier to be incorporated into the polymer is introduced into the polymerization system after 70 wt.% of the polymer to be finally formed has been formed, at least 50 wt.% of the

copolymerizable modifier to be incorporated into the polymer thus being contained in the shell portion of the particles of the polymer, and

(3) after 90 wt.% of the polymer to be finally formed has been formed, the concentration of said copolymerizable modifier is maintained at at least 0.01 mol.% based on the total amount of tetrafluoroethylene and the modifier in the polymerization system, the outer most portion of particles, corresponding to at most 10 wt.% of the polymer to be finally obtained, thus containing the copolymerizable modifier in an amount of at least 0.01 mol.%.

4,134,996

METHOD FOR INHIBITING ADP-INDUCED PLATELET AGGREGATION USING PHENYLTHIOALKYLAMINES

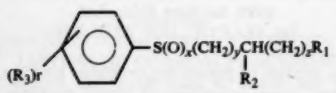
Joseph E. Dunbar; Louis E. Begin; Robert J. Broersma, and George D. Dickerson, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 714,950, Aug. 16, 1976, abandoned. This application Sep. 14, 1977, Ser. No. 833,125

Int. Cl.[2] A61K *31/135, 31/33, 31/535, 31/445*

U.S. Cl. 424—330 **8 Claims**

1. A method for inhibiting ADP-induced platelet aggregation and treating thrombosis in a mammal in need thereof comprising administering internally to said mammal a platelet aggregation inhibiting amount of a compound corresponding to the formula:



and the pharmaceutically-acceptable salts thereof wherein:

R_1 is diloweralkylamino, dicycloalkylamino, or hexamethyleneimino;

R_2 is lower alkyl or hydrogen;

R_3 is lower alkyl, halo, hydroxy, amino, acetamino, acetoxy, lower alkoxy, or carboxy;

r is an integer of from 0 to 5;

x is an integer of from 0 to 2;

y is an integer of from 0 to 4 with the proviso that when R_2 is lower alkyl, y is 1; and

z is an integer of from 0 to 3 with the proviso that when R_2 is hydrogen z is 0.

4,134,997

EFFECT OF AN AMINOTETRALIN DERIVATIVE ON CORONARY BLOOD FLOW IN INFARCTED HEARTS

Joseph G. Cannon; John P. Long, and John N. Diana, all of Iowa City, Iowa, assignors to University of Iowa Research Foundation, Iowa City, Iowa

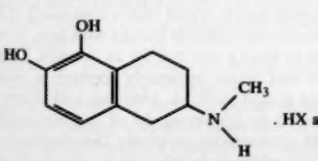
Filed Mar. 1, 1977, Ser. No. 773,353

The portion of the term of this patent subsequent to Feb. 4, 1992, has been disclaimed.

Int. Cl.[2] A61K *31/135*

U.S. Cl. 424—330 **6 Claims**

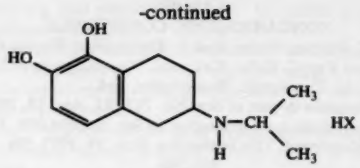
1. A method for increasing the coronary blood flow in a warm blooded mammal comprising introducing into the blood stream of said mammal an amount of a compound selected from the group consisting of:



(I)

. HX and

-continued



(II)

effective to produce the increased flow, X = Cl^-, Br^-, I^-, NO_3^-, SO_4^{--}, PO_4^{---}tartrate or other organic acid anion.

4,134,998

SPRAY COOKING OF FOOD ARTICLES

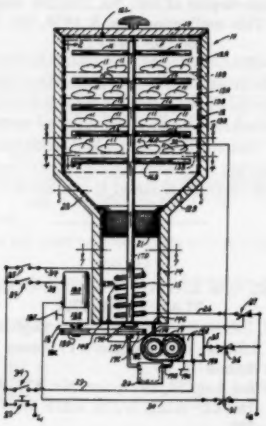
Benno E. Liebermann, 2805 Lime Kiln La., Louisville, Ky. 40222

Division of Ser. No. 707,318, Jul. 21, 1976, Pat. No. 4,047,476. This application Jun. 13, 1977, Ser. No. 805,964

The portion of the term of this patent subsequent to Sep. 13, 1994, has been disclaimed.

Int. Cl.[2] A23L *1/01, 1/315*

U.S. Cl. 426—438 **7 Claims**



1. A method of cooking food articles comprising the steps of:

(a) disposing said articles in a space on support means such that substantially the entire surface of each article is exposed,

(b) directing sprays of a liquid cooking medium, maintained by heater means at a temperature below that at which said sprays of liquid cooking medium will receive any latent heat of vaporization therefrom, against said articles at a discharge pressure of from about 10 to 70 p.s.i.g. and at a preselected cooking temperature without said articles being immersed in said cooking medium, said sprays being directed simultaneously and aligned in a common plane with one another against opposed sides of each article while maintaining relative movement between said sprays and said support means such that each article is clamped between the pressurized sprays of liquid cooking medium and substantially the entire surface of each article is contacted by said medium, and

(c) continuing said spraying until said food articles are cooked.

4,134,999

NONCARIOGENIC COMESTIBLE

Joseph C. Muhler, Howe; Carl J. Kleber, Fort Wayne, both of Ind., and Ray G. Kelly, Kirkwood, Mo., assignors to Indiana University Foundation, Bloomington, Ind.

Continuation-in-part of Ser. No. 787,752, Apr. 15, 1977, abandoned, which is a continuation of Ser. No. 654,058, Jan. 30, 1976, abandoned. This application Nov. 29, 1977, Ser. No. 855,740

Int. Cl.[2] A23L *1/236*

U.S. Cl. 426—3 **18 Claims**

1. A sweetened comestible comprising as a noncariogenic nutritive sweetener a homogeneous mixture of at least one first sweetening agent selected from the group consisting of sorbitol, xylitol, and mixtures thereof and at least one second sweetening agent selected from the group consisting of dextrose, fructose, and mixtures thereof, with the mixture containing at least about 75% of the first agent by weight of the mixture where dextrose is the second agent and at least about 60% of the first agent by weight where fructose is the second agent, the mixture being present in an amount effective to sweeten the comestible.

4,135,000

PROCESS FOR REDUCING THE RIBONUCLEIC ACID CONTENT OR YEAST PROTEIN

Erich H. Schuldt, Jr., St. Louis County, Mo., assignor to Anheuser-Busch, Incorporated, St. Louis, Mo.

Continuation-in-part of Ser. No. 710,733, Aug. 2, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,305

Int. Cl.[2] A23J *1/18*

U.S. Cl. 426—60 **7 Claims**

1. A process for the activation, protection, and stabilization of the endogenous ribonuclease of yeast against alkaline conditions which comprises adding zinc salts or biologically available zinc to a yeast medium used in the production of a protein concentrate having a reduced nucleic acid content before the pH of the yeast medium is raised above about 7.

4,135,001

PROCESS FOR ENHANCING THE COLOR AND FLAVOR OF TEA

Christopher J. Edmonds, South Nutfield, England, and Geir V. Gudnason, Atlanta, Ga., assignors to Tenco Brooke Bond, Ltd., Great Britain

Filed Aug. 24, 1977, Ser. No. 827,397

Int. Cl.[2] A23L *1/275;* A23F *3/00*

U.S. Cl. 426—250 **32 Claims**

1. A process for improving the color and flavor of a nondecaffeinated beverage consisting essentially of tea, said process comprising adding a non-toxic aluminum salt to said beverage or a precursor thereof in an amount effective to enhance the color and flavor of said beverage, said adding being done at any stage during or prior to the manufacture and preparation of said beverage.

4,135,002

METHOD OF STRIP CUTTING RAW POTATOES

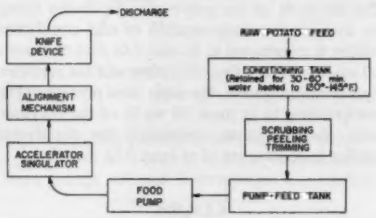
Joseph L. Hodges, and Glen R. Green, both of Ontario, Oreg., assignors to Ore-Ida Foods, Inc., Boise, Id.

Division of Ser. No. 745,537, Nov. 29, 1976, Pat. No. 4,082,024. This application Aug. 22, 1977, Ser. No. 826,379

Int. Cl.[2] A23L *1/216*

U.S. Cl. 426—482 **4 Claims**

1. In the strip cutting of raw potatoes by hydraulically passing said raw potatoes through a knife device provided with strip cutter members, the improvement comprising first subjecting the potatoes to a conditioning treatment at a temperature within the range of substantially 130° to 145° F. for a period of time sufficient to heat the potatoes entirely throughout to a corresponding temperature.



4,135,003

PROCESS OF PRESERVING VEGETABLE PRODUCE, SUCH AS POTATOES, IN CLOSED PACKAGES

Franz Mohwinkel, Ahlften uber Soltau, Germany, assignor to Washington Nu Process, Inc., Quincy, Wash.

Continuation of Ser. No. 804,694, Mar. 5, 1969. This application Jan. 6, 1972, Ser. No. 215,888

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1968, 7751830; Aug. 21, 1968, 1792332

The portion of the term of this patent subsequent to Apr. 25, 1989, has been disclaimed.

Int. Cl.[2] C12C *3/04;* A23B *7/00*

U.S. Cl. 426—412 **9 Claims**

1. In the process of preserving vegetable produce, such as potatoes and green vegetables, in closed packages, the improvement comprising placing thepeeled or shelled raw vegetable produce into an empty plastic container, vacuum sealing the container without the addition of any water so that there is no water therein other than the natural juices within the raw produce therein, treating said vacuum sealed container in a cooking receptacle for a period of time from about 35 minutes about 2½ hours with a heating medium at a temperature of about 100° C while subjecting said container during cooking to an external pressure in said cooking receptacle exceeding the internal pressure in said container such that the container is firmly compressed and the produce therein can finish cooking without the container blowing up and bursting, and then cooling said container while it is still subject to the higher external pressure, and further wherein the packaged vegetables, after the cooking treatment and cooling, are stored in said vacuum sealed container at room temperature for considerable periods of time without deterioration of the wholesomeness of the produce.

4,135,004

METHOD OF MAKING A TOASTER POTATO PRODUCT

Gilbert Finkel, 6 Jagged Rock Rd., Parsippany, N.J. 07054

Filed May 19, 1976, Ser. No. 687,877

Int. Cl.[2] A23L *1/00*

U.S. Cl. 426—550 **3 Claims**

1. The method of making a frozen toaster French fried potato product comprising forming a slurry comprising a high amylose product selected from amylose resulting from the fractionation of whole starch; whole starch containing at least 55% by weight of amylose; amylose treated with heat, or acid, or oxidizing agent to form a thin boiling; an amylose ester; or an amylose ether and water, separately forming a mixture comprising oil and potato particles, admixing said slurry and said mixture to form a dough having the oil and high-amylose product dispersed substantially uniformly therethrough, and consisting essentially of for each 100 parts by weight thereof:

	Parts by Weight
Potato particles	22–35
High amylose product	2–10
Oil	2–15
Water	55–65

heating the dough to a temperature of about 120° F., shaping the dough to the shape desired while at said temperature, frying the shaped dough for a time sufficient to cook the shaped dough, and freezing the cooked dough.

4,135,005
STABILIZED ICINGS

Hsiung Cheng, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

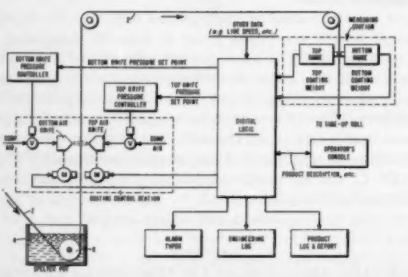
Filed May 9, 1977, Ser. No. 794,773
Int. Cl.[2] A23G *3/00*
U.S. Cl. 426—659 **6 Claims**

1. In an icing composition containing sugar and water as major ingredients, the improvement wherein the composition contains a fat having a melting point of from about 32° to about 55° C. and also a gelling system consisting essentially of from about 25 to about 75 weight % xanthan gum and from about 75 to about 25 weight % of locust bean gum, the gelling system being present in an amount effective to impart freeze-thaw stability and heat stability to the icing composition.

4,135,006
AUTOMATIC COATING WEIGHT CONTROLS FOR AUTOMATIC COATING PROCESSES

Gerald J. Readal, Pittsburgh; John R. Tiskus, and William J. Tomcanin, both of Monroeville, all of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 29, 1974, Ser. No. 493,019
Int. Cl.[2] G01B *19/08*
U.S. Cl. 427—10 **15 Claims**



1. In a moving strip coating process, in which a substrate strip is passed through a coating means, then past a coating control means located downstream of said coating means, said strip then passing coating-weight measuring means, a method for controlling the weight and distribution of coating material applied to said moving substrate strip, comprising the steps of:

measuring the weight of coating material on said substrate at a plurality of incremental regions across said strip and generating electrical signals representative of the measured increments;

storing said signals in a plurality of storage units corresponding in number to said plurality of incremental measuring regions;

combining said plurality of stored incremental coating weights in a first arithmetic circuit;

storing a plurality of electrical signals representing predetermined coating weight set point data in a plurality of further storage units corresponding in number to said plurality of incremental measuring regions;

combining said plurality of stored set points in a second arithmetic circuit;

comparing the combined set points and the current set point in a third arithmetic circuit and generating a first difference signal representing the difference between said combined and current set points;

storing a plurality of electrical signals representing coating correction signals in a still further plurality of storage units;

combining said plurality of stored coating correction signals in a fourth arithmetic circuit;

comparing the combined coating correction signals and the last coating correction signal in a fifth arithmetic circuit and generating a second difference signal representing the difference between said combined and last coating correction signals;

adding said combined coating-weight signal and said first and second difference signals to obtain a modified combined coating weight signal;

comparing said modified combined coating-weight signal and the current set point signal in a sixth arithmetic circuit and generating a third difference signal representing the difference between said modified combined and current set point signals;

calculating a new coating correction signal from said third difference signal; and

transmitting said new coating correction signal to said coating control means to control the coating applied to said strip in accordance with said new coating correction signal.

4,135,007
RADIATION CURABLE COATING COMPOSITION COMPRISING AN ACRYL URETHANE OLIGOMER, AND AN ULTRA-VIOLET ABSORBER

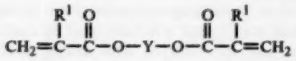
Donald H. Lorenz, Basking Ridge; Shu T. Tu, E. Brunswick, and Donald P. Wyman, Wayne, all of N.J., assignors to GAF Corporation, New York, N.Y.

Filed Dec. 29, 1977, Ser. No. 865,664
Int. Cl.[2] B05C *5/00, 17/04*
U.S. Cl. 427—44 **4 Claims**

1. A process for coating a substrate comprising in sequence the steps of:

I. contacting the substrate with a coating composition comprising:

A. an oligomer of Formula I:



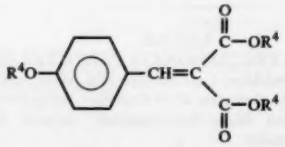
(I)

wherein:

R^1 is hydrogen or methyl;

Y is a divalent urethane residue;

B. a benzylidene acid ester ultra-violet light absorber of the Formula IV:



(IV)

wherein R^4 is independently alkyl or hydroxy alkylene;

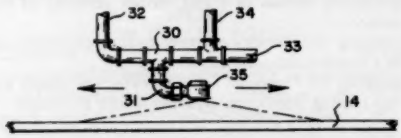
C. a photoinitiator to form a coated substrate wherein the amount of B. is 0.5 to 3 weight percent based on the weight of the composition,

II. exposing the coated substrate to actinic radiation until an adherent dry polymerized weather-resistant coating is formed on the substrate.

4,135,008
METHOD OF SILVERING MIRRORS

Frank M. Workens, Jamestown, N.Y., assignor to Falconer Plate Glass Corporation, Falconer, N.Y.

Filed Nov. 21, 1977, Ser. No. 853,410
Int. Cl.[2] B05D *1/02*
U.S. Cl. 427—168 3 Claims



1. Method of applying silver solution to a glass surface to be coated with silver comprising the steps of

a. admixing a solution of silver, a solution of caustic and a solution of reducing agent at a common point prior to delivery to a conical spray nozzle,

b. immediately delivering all of said admixture of solutions to a said conical spray nozzle capable of delivering all of said admixture through a single orifice under pressure sufficient to form a defined conical spray,

c. spraying the solution as defined spray through a single orifice on the glass to be coated while moving the glass past the nozzle,

d. removing excess silvering solution from the glass, and

e. rinsing the coated glass.

4,135,009
BENZOIC ACID TERMINATED OLIGOESTERS AS MELT FLOW MODIFIERS OF THERMOPLASTIC COATINGS AND POWDERS

Andrew Mercurio, Ambler, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Nov. 26, 1975, Ser. No. 635,514
Int. Cl.[2] G08G *63/18*; G08L *67/06*
U.S. Cl. 427—195 25 Claims

1. In a composition comprising a mixture of:

A. a low molecular weight polyester resin and

B. a hard high molecular weight resin or blend of such resins,

A being present in lesser amount than B, the improvement wherein the polyester resin is

(1) benzoic acid or saturated isocyclic monocarboxylic acid terminated,

(2) a melt flow modifying polyester resin having as its dibasic acid component a minimum of 50 mole percent of an isocyclic dicarboxylic acid having 8–10 carbon atoms and

(3) a polyester having a glass transition temperature between −30° C. and +40° C., and a number average molecular weight between 500 and 1500;

thus modifying the high molecular weight resin to be more flowable at an elevated processing temperature and little changed in hardness at the temperature of use.

4,135,010
SODIUM PERCARBONATE PARTICLES (B)

Hans Klebe, Rheinfelden; Gerd Knippschild, Wehr, and Hubert Schuster, Karsau-Beuggen, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Germany

Filed Sep. 27, 1977, Ser. No. 837,261
Claims priority, application Fed. Rep. of Germany, Mar. 19, 1977, 2712138
Int. Cl.[2] B05D *7/24*
U.S. Cl. 427—215 17 Claims

1. Sodium percarbonate particles consisting essentially of a sodium percarbonate nucleus and an encasing layer consisting essentially of sodium silicate and either (1) sodium percarbonate, (2) sodium tripolyphosphate or (3) sodium percarbonate and sodium tripolyphosphate.

9. A process for preparing the product of claim 1 comprising wetting with the sodium percarbonate nucleus with aqueous sodium silicate and thereafter coating the wet particles with (1) sodium percarbonate dust, (2) sodium tripolyphosphate or (3) a mixture of sodium percarbonate dust and sodium tripolyphosphate.

4,135,011
PROCESS FOR PRODUCING MICROPOROUS SHEET MATERIALS

Masahisa Mimura, Mihara, Japan, assignor to Teijin Cordley Ltd., Osaka, Japan

Filed Sep. 17, 1975, Ser. No. 613,988
Claims priority, application Japan, Oct. 3, 1974, 49/113292
Int. Cl.[2] B05D *5/00*
U.S. Cl. 427—246 3 Claims

1. In a process for producing microporous sheet materials by the steps of:

(1) preparing a suspension of a resinous component in an organic solvent having a boiling point of not more than 120° C., the solubility at 25° C. of water in the organic solvent being from 1 to 50 g per 100 g of the solvent, the resinous component being selected from the group consisting of (a) a polyurethane-type elastomer containing polyoxyethylene segments in an amount of 2 to 25% by weight (polymer A) and (b) a mixture of polymer A and a polyurethane-type elastomer not containing polyoxyethylene segments (polymer B), the resinous component consisting of 20 to 85% by weight of a part soluble in the organic solvent and 80 to 15% by weight of a part insoluble in the organic solvent;

(2) mixing the resulting organic solvent suspension with water in an amount of not less than 50% by weight based on the resinous component in the organic solvent suspension to form a water-in-oil dispersion;

(3) coating or impregnating a substrate with the resulting dispersion; and

(4) drying the coated or impregnated substrate; the improvement which comprises prior to step (4) contacting the resulting coated or impregnated substrate of step (3) with a coagulant selected from the group consisting of methanol, ethanol, propanol and isopropanol for a period of time of from 10 to 180 seconds to coagulate a part of the resinous component, and thereafter drying the substrate according to step (4) at a temperature between 40° C. and 120° C. for 10 to 30 minutes to evaporate the organic solvent and water.

4,135,012
SURFACE TREATMENT OF ZIRCONIA CERAMIC

Yao-Sin Su, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 25, 1977, Ser. No. 790,432
Int. Cl.[2] B05D *3/04, 3/10*
U.S. Cl. 427—309 17 Claims

1. A method of chemically micropitting and/or microcratering a smooth surface of an impervious zirconia-base ceramic comprising

contacting said smooth surface with a liquid leachant selected from concentrated sulfuric acid, ammonium bisulfate, alkali metal bisulfate and mixtures thereof at a temperature of at least about 250° C. and for a time sufficient to effect micropitting and/or microcratering generally uniformly distributed throughout the microstructure of the resultant leached surface,

removing said leached surface from contact with said leachant,

contacting said leached surface with hydrochloric acid to effect removal from said leached surface of a residue thereon comprising sulfate of metal elements including zirconium in said ceramic,

removing said leached surface from contact with the hydrochloric acid, and

rinsing said leached surface with water to effect removal of acid residue from that surface.

4,135,013
METHOD FOR THE PREVENTION OF STRESS CORROSION CRACKING

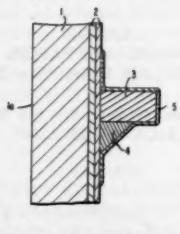
Kineo Yamaguchi, Urawa, and Katsuhiko Kawakami, Kurashiki, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 628,859, Nov. 5, 1975, abandoned. This application Jan. 31, 1977, Ser. No. 764,142

Claims priority, application Japan, Nov. 5, 1974, 49-126569

Int. Cl.[2] C10G *23/00*; C23C *7/00*

U.S. Cl. 427—405 **6 Claims**



1. A method for preventing stress corrosion cracking of apparatus made of a first ferrous metal having manually welded portions and gap parts therein used in a corrosive and substantially water free environment in a heavy oil desulfurization unit at a temperature of from 350° to 400° C and containing petroleum oil components and a hydrogen atmosphere at a pressure of 120 to 140 atm. which comprises:

(a) Coating the surface of the manually welded portion of said first ferrous metal and covering said gaps with a second metal which is more electrochmeically positive than said first metal, said second metal being a member selected from the group consisting of aluminum, magnesium, zinc and an alloy containing aluminum, magnesium or zinc, said coating covering said welded portion and gap parts and extending at least 200 mm beyond the periphery thereof, and

(b) Placing the coated portion of said first ferrous metal in said corrosive environment.

4,135,014
GLASS BOTTLE COATING COMPOSITIONS

George A. Salensky, Metuchen, and Stanley H. Richardson, Millington, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

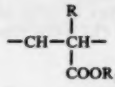
Filed Mar. 23, 1976, Ser. No. 669,627

Int. Cl.[2] B65D *1/00*

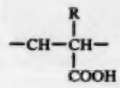
U.S. Cl. 428—35 **16 Claims**

1. An article of manufacture comprising a glass bottle having its outer surface coated with a continuous layer amount of a random ethylene copolymer having a melt index of about 60 to about 120 decigrams per minute when measured under a pressure of 44 psi at a temperature of 190° C. in accordance with ASTM D-1238, containing copolymerized therein:

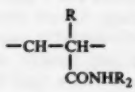
(a) about 0.05 to about 4 mole percent of an acrylic ester moiety having the formula:



(b) about 0.01 to about 1 mole percent of an acrylic acid moiety having the formula:



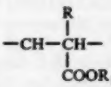
(c) about 2 to about 8 mole percent of an amide moiety having the formula:



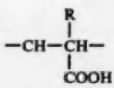
wherein R is hydrogen or methyl and each of R_1 and R_2 is an alkyl group having one to four carbon atoms and the remainder consisting essentially of ethylene moieties.

9. The method for coating glass bottles with a continuous coating of a random ethylene copolymer which comprises contacting said glass bottles at a temperature of about 200° to about 300° C. under powder conditions with sufficient powder coating composition to provide a continuous coating on said bottle surfaces, said coating composition consisting essentially of: a major amount of a random ethylene copolymer having a melt index of about 60 to about 120 decigrams per minute measured at 44 psi and 190° C., containing copolymerized therein:

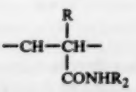
(a) about 0.05 to about 4 mole percent of an acrylic ester moiety having the formula:



(b) about 0.01 to about 1 mole percent of an acrylic acid moiety having the formula:



(c) about 2 to about 8 mole percent of an amide moiety having the formula:

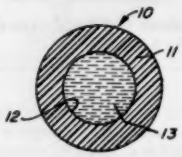


wherein R is hydrogen or methyl and each of R_1 and R_2 is an alkyl group having from 1 to 4 carbon atoms and the remainder consisting essentially of ethylene moieties.

4,135,015
ARTICLE OF MANUFACTURE

John S. Boyden, Jr., 1942 Yalecrest Ave.; William W. Epstein, 1193 S. 1900 East, and Paul W. Boyden, 1474 Laird Ave., all of Salt Lake City, Utah 84108

Division of Ser. No. 509,452, Sep. 26, 1974, Pat. No. 3,990,437.
This application Nov. 8, 1976, Ser. No. 739,799
Int. Cl.[2] A61F 5/04
U.S. Cl. 428—36 16 Claims

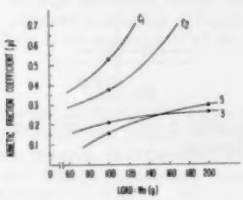


1. A flexible element comprising an elongated generally cylindrical continuous pliable outer sheath or main body portion formed of a stable pliable high molecular weight organic composition which is flexible and which has at least one longitudinally extending passage formed therein and said passage containing a pliable polymerizable organic material protectively enclosed within said passage, said organic material adapted to be transformed into a rigid state when exposed to wave energy having an intensity effecting the polymerization of said organic material, said sheath or main body portion adapted to be immobilized by the said polymerization of said organic material, and said element after exposure to said wave energy being characterized by having the outer sheath or main body portion formed of pliable high molecular weight organic composition and the polymerizable organic material enclosed within said passage being in a rigid polymerized form which immobilizes said outer sheath or main body portion.

4,135,016
MAGNETIC RECORDING MATERIAL

Hiroshi Ogawa; Matsuaki Nakamura; Masashi Aonuma, and Yasuo Tamai, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

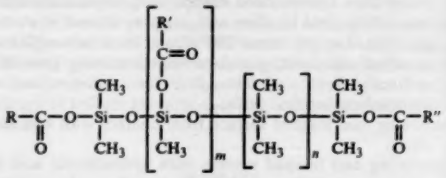
Filed Mar. 9, 1977, Ser. No. 776,076
Claims priority, application Japan, Mar. 10, 1976, 51/25707
Int. Cl.[2] H01F 10/02
U.S. Cl. 428—64 23 Claims



1. A magnetic recording material, which comprises a non-magnetic support having thereon a magnetic layer containing ferromagnetic powder dispersed in a binder, with the magnetic layer containing an organic silicone compound represented by the following general formula [I];

[I]

-continued



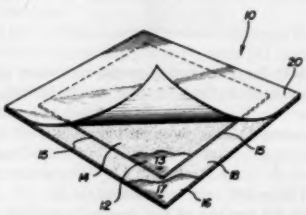
wherein R, R′ and R″, which may be the same or different, each has 7 to 21 carbon atoms and represents an alkyl group, an alkenyl group, an alkadienyl group, an alkatrienyl group or an alkatetraenyl group; m represents an integer of 1 to 100; n represents an integer of 0 to 250; and $m + n \leqq 300$ and $m \geqq n/5$.

19. The magnetic recording material of claim 1, wherein said non-magnetic support is a disc or a card of a thickness of about 0.5 to about 10 mm.

4,135,017
LAMINATE PATCH

Dennis Hoffmann, Sr., 509 Valley View Dr., Wildwood, Ill. 60030

Filed Dec. 12, 1977, Ser. No. 859,699
Int. Cl.[2] B32B 35/00
U.S. Cl. 428—78 9 Claims



1. An improved laminate patch for closing an opening in an interior wall surface comprising:

a thin and relatively rigid non-combustible plate of aluminum sheeting having a first side with a central portion for covering the opening to be closed in the surface, a periphery for disposition in intimate proximity to the surface, and bordered by edge portions, said thin plate having a second side opposite the first side;

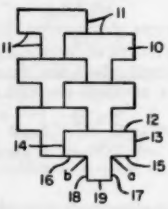
adhesive coating means disposed on the first side of said thin plate and on at least a substantial portion of the periphery thereof for firmly bonding the periphery in intimate proximity to the wall surface; and

plate cover means of fibrous material laminated at the interior surface thereof to the second side of said thin plate for covering said thin plate and for extending over the edge portions thereof to dispose the exterior surface of said cover means in substantially planar configuration with the wall surface, said thin plate cover means having an exterior surface adapted for receiving a wall finishing compound thereon and said interior surface of said plate cover means having an adhesive thereon.

4,135,018
THERMAL SHOCK RESISTANT HONEYCOMB STRUCTURES

George E. Bonin; William P. Lentz, both of Addison; Robert V. VanDeWoestine, Corning, all of N.Y.; Stuart M. Dockerty, deceased, late of Corning, N.Y., by Robert C. Dockerty, executor, Poughkeepsie, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Aug. 5, 1976, Ser. No. 711,987
Int. Cl.[2] B32B *3/12*
U.S. Cl. 428—116 12 Claims



1. A honeycomb structure having improved thermal shock resistance which comprises, a ceramic body having a plurality of individual cells extending longitudinally therethrough, a plurality of interconnected wall portions forming said cells, said cells extending across the areal extent of said ceramic body and being of uniform size and shape, each said cell being formed with at least one movable joint formed by the intersection of two wall portions, and said movable joint and said wall portions forming the same being displaced upon the application of a force to said cellular structure to compensate for stresses generated by such force and inhibit the structural failure thereof.

4,135,019
LOW DENSITY BISMALEIMIDE-CARBON MICROBALLOON COMPOSITES

Demetrius A. Kourtides, San Jose, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 16, 1977, Ser. No. 778,195
Int. Cl.[2] B32B *3/12*
U.S. Cl. 428—117 3 Claims

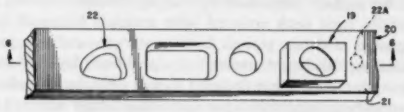
1. A composite structure comprising:
a. a bismaleimide resin impregnated cloth;
b. a cellular honeycomb core structure selected from the group consisting of polyamide paper and bismaleimide-glass fabric wherein said cells contain carbon microballoons; and
c. a bismaleimide adhesive bonding said impregnated cloth to said core structure.

4,135,020
PROCESS FOR PRODUCING ART WORKS AND RESULTING PRODUCT

Paul E. Maxwell, Carrollton, Tex., assignor to Elevations/-Design, Inc., Dallas, Tex.

Division of Ser. No. 552,323, Feb. 24, 1975, abandoned, which is a continuation-in-part of Ser. No. 443,313, Feb. 19, 1974, Pat. No. 3,925,586. This application Mar. 31, 1977, Ser. No. 783,329
Int. Cl.[2] B32B *3/10, 1/00;* B05C *1/00, 5/00*
U.S. Cl. 428—131 1 Claim

1. A stencil for making a modeling paste art product, comprising:
a. a flat thick sheet of a thermosetting plastic for overlaying a relatively thin flexible material substrate in close juxtaposition thereover,
b. said body defining an open cavity thru which modeling paste may be cast for adherence to and as an island on the substrate,
c. said body also defining a closed cavity opening toward the substrate only, to enclose previously cast islands,
d. individual wire filaments extending independently of each other across said open cavity, and
e. means to secure said filaments to said body,

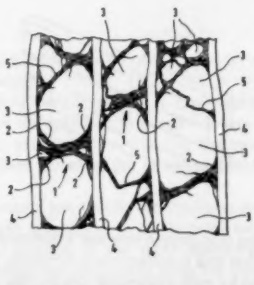


f. whereby the combination of the above structures will provide a stencil capable of producing multiple cast islands of differing heights paste modeling past on a thin flexible substrate wherein at least one of the islands will have a pointed lip around its periphery and rippled surface tips across its top surface when said stencil is removed from the substrate.

4,135,021
NET-LIKE PRODUCT PRODUCED BY STRETCHING A FILM COMPOSED OF TWO INCOMPATIBLE POLYMERS

Albert G. Patchell, Welwyn Garden City; William O. Murphy, and Ronald Lloyd, both of Sawbridgeworth, all of England, assignors to Smith & Nephew Plastics Ltd., Hertfordshire, England

Filed Jun. 15, 1976, Ser. No. 696,370
Claims priority, application United Kingdom, Jun. 16, 1975, 25659/75
Int. Cl.[2] A61L *15/00;* B29D *7/24;* B32B *3/10, 5/02*
U.S. Cl. 428—134 10 Claims



1. A netted material integrally formed in a synthetic polymeric material and possessing straight smooth parallel longitudinal ribs interconnected by a plurality of fibrillated and split strands exhibiting a plurality of small fibres non-uniformly interspersed with a plurality of differently sized voids permeable to blood and water, the longitudinal ribs and the small fibres oriented by the biaxial stretching of the material and the synthetic polymeric material consisting of a blend of at least two incompatible polymers to provide a non-lustrous appearance and easy splitting of the interconnecting strands the blend comprising a mixture of a major proportion by weight of a polyolefin and a minor proportion by weight of a polymer containing an aryl group.

4,135,022

BUILT-UP ROOFING USING SULFUR ASPHALT

Gerhard J. A. Kennepohl, Oakville; Laverne J. Miller, Georgetown, and David C. Bean, Oakville, all of Canada, assignors to Gulf Canada Limited, Toronto, Canada

Filed Oct. 7, 1975, Ser. No. 620,472
Int. Cl.[2] B32B *11/10, 11/02*
U.S. Cl. 428—143 5 Claims

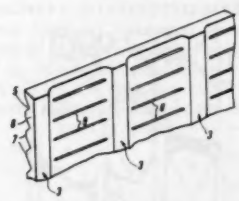
1. An asphalt based built-up roofing structure having a substantially rigid deck covered with multiple layers of felt impregnated with an asphalt based saturant, and a separately applied asphalt based coating on top of each layer of felt, the bottom felt layer being fastened to said rigid deck, each superposed impregnated felt layer also being firmly adhered to the asphalt based coating applied to the felt layer thereunder and with at least one of said saturant and said coatings consisting of a uniform blend of from 10% to 55% sulfur dispersed in 90% to 45% by weight of asphalt, with any of the sulfur which does not dissolve in the asphalt being dispersed as finely divided particles in the size range below substantially 50 microns.

4,135,023

EMBOSSED FILM PRODUCT AND ADHESIVE COATED STRIP FORMED THEREFROM

Ronald Lloyd, Sawbridgeworth; Albert G. Patchell, Welwyn Garden City; William O. Murphy, Sawbridgeworth, and Peter J. Herbert, Bishops Stortford, all of England, assignors to Smith & Nephew Plastics Ltd., Harlow, England

Continuation of Ser. No. 587,874, Jun. 18, 1975. This application Mar. 24, 1977, Ser. No. 780,917
Claims priority, application United Kingdom, Jun. 21, 1974, 27636/74; Jun. 21, 1974, 27637/74
Int. Cl.[2] B32B *3/30*
U.S. Cl. 428—167 9 Claims



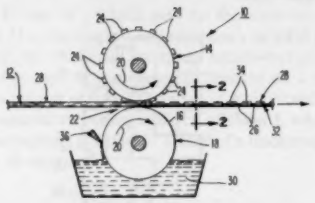
1. A polymer film having low tear resistance both in a longitudinal direction and in a transverse direction, said film having been produced by melt embossing and having on one surface a plurality of primary parallel ribs and grooves extending in a longitudinal direction at a spacing of from about 40 to 120 grooves per inch, and on the other surface a plurality of secondary parallel ribs and grooves extending in a secondary direction intersecting with the longitudinal direction at an angle of at least 30° and at a spacing which is from about 100 to 250 grooves per inch; the combined depths of the grooves being substantially equal to the film thickness; the secondary ribs and grooves being more closely spaced than the primary ribs and grooves; and the film having been subjected to at least predominantly uniaxial stress in a direction at right angles to the longitudinal direction by stretching from about 100% to 400%.

4,135,024

METHOD OF TREATING A LOW INTEGRITY DRY-FORMED NONWOVEN WEB AND PRODUCT MADE THEREFROM

Joseph W. Callahan, Drexel Hill, and John G. Trumbull, Lima, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Aug. 16, 1976, Ser. No. 715,175
Int. Cl.[2] B32B *3/30, 31/20*
U.S. Cl. 428—171 9 Claims



1. A method of simultaneously strengthening and decorating a low integrity dry-formed nonwoven fibrous web, said method comprising the steps of:

a. forming spaced-apart densified regions in the web to strengthen the web by embossing a front surface of the web with spaced-apart raised surfaces of an embossing roll, the densified regions being able to transmit a treating fluid completely through the thickness of the web from a rear surface of the web to the front surface thereof, and simultaneous with the embossing;

b. applying a treating fluid that includes a coloring agent to the rear surface of the web from a treating fluid conveying surface that is free of raised, spaced-apart web embossing areas for causing the fluid to be transmitted completely through the thickness of the web from the rear surface to the front surface thereof in substantially only the densified regions to thereby impart a valley print decorative effect in the front surface, the treating fluid conveying surface being disposed opposite the raised surfaces on the embossing roll and constituting a backing surface for the web during the step of forming the densified regions in said web.

4,135,025

FABRIC WEB FOR PRODUCTION OF REINFORCING INSERTS FOR GARMENTS

Herbert Backes, Munich, Germany, assignor to Kufner Textilwerke KG, Munich, Germany

Filed Jan. 31, 1977, Ser. No. 764,172
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1976, 2603855
Int. Cl.[2] B32B *3/00*
U.S. Cl. 428—195 22 Claims

1. Fabric web with a reinforced region in which the web has graduated, different resilience and spring force, for the production of garment inserts cut therefrom for reinforcement of shoulder, chest and lap parts of garments, in which fabric web, at least in the reinforced region, there is a double-cloth formed by two fabrics, each of the said two fabrics comprising one warp system of warp threads and one weft system of weft threads, characterized in that reinforcing threads in the form of a second warp or weft thread system are embedded between the two fabrics, said reinforcing threads having a stronger

spring force than said warp and weft threads of the two fabrics of the said double-cloth, some of the threads of at least one of said fabrics or of said second system being interlaced with threads of at least the other of said fabrics and, at least a first portion of one of such systems within said region having physical characteristics which differ from the physical characteristics of a second portion of said one system, said characteristics varying in a direction transverse to the length direction of the threads of said one system to provide a spring force and resilience which varies from said first portion of said reinforced region toward another portion of said web.

4,135,026
ALCOHOLYZED ETHYLENE-VINYL ACETATE PACKAGING MATERIAL

John M. Hoyt, Cincinnati, and Joseph Fischer, Fairfield, both of Ohio, assignors to National Distillers and Chemical Corp., New York, N.Y.

Continuation of Ser. No. 524,728, Nov. 18, 1974, abandoned. This application Jul. 20, 1977, Ser. No. 817,494
Int. Cl.[2] C08F *216/06, 8/00, 6/00, 6/08*
U.S. Cl. 428—220 **6 Claims**

1. A blown packaging film for foods constituted of unplasticized, alcoholyzed ethylene-vinyl acetate resin prepared by

alcoholyzing an ethylene-vinyl acetate copolymer containing from 20 to 35 weight percent combined vinyl acetate and having a melt index of from 0.5 to 20 g/10 min. in a reaction medium comprising as components thereof said ethylene-vinyl acetate copolymer, a low-boiling alcohol, a hydrocarbon solvent in an amount up to 1000 parts by weight per part of the alcohol and an alkaline or acidic catalyst, wherein the aggregate initial amount of water contained in the copolymer, the alcohol, the hydrocarbon solvent and the catalyst prior to the alcoholysis reaction is no more than 10% of the weight thereof,

regulating the aggregate water content of said components introduced into a single alcoholysis reaction and into successive, otherwise identical alcoholysis reaction runs as not to vary by more than 50% by weight of said aggregate water content thereof,

maintaining the reaction medium throughout the reaction and throughout successive reaction runs under a dry, inert atmosphere, and

otherwise carrying out the alcoholysis under conditions preventing the addition or loss of substantial quantities of water to or from said medium;

said alcoholyzed resin containing from 8 to 18 weight percent residual vinyl acetate and having a melt index of from 0.5 to 10 g/10 min.

4,135,027
SEMICONDUCTOR ELEMENT EMBODYING AN OPTICAL COATING TO ENHANCE THERMAL GRADIENT ZONE MELTING PROCESSING THEREOF

Thomas R. Anthony, and Harvey E. Cline, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 30, 1976, Ser. No. 718,826
Int. Cl.[2] B32B *3/02;* **B05D** *5/12*
U.S. Cl. 428—195 **14 Claims**

1. A semiconductor element comprising

a body of semiconductor material having two major opposed surfaces being, respectively, the top and bottom surfaces thereof, a preferred crystalline material structure, a vertical axis aligned substantially parallel to a first crystal axis of the material of the body, a preferred planar crystal orientation for at least one of the major surfaces, a first type conductivity and a first level of resistivity,

a first optical coating disposed on a selected portion of at least one of the two major surfaces, the optical coating having the capability of enhancing either the absorption or the re-radiation of a predetermined range of wavelength of the infrared radiation spectrum to increase the flow of heat through a predetermined portion of the body when infrared radiation from a radiant energy source impinges upon at least one of the two major opposed surfaces and is re-radiated from the opposing major surface,

the first optical coating having an annular configuration when disposed on the major surface exposed directly to the radiant energy source and enhancing the absorption of a predetermined range of wavelength of the radiation spectrum,

the optical coating has a thickness t_2 which is equal to a multiple of one-fourth of the wavelength of the incident infrared radiation from a radiant energy source impinging upon the optical coating and the major surface upon which it is disposed and is expressed by the equation

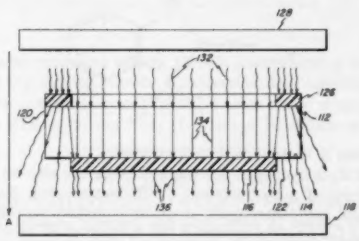
$$t_2 = (2n-1)\lambda_s/4N_c$$

wherein

t_2 = thickness of the optical coating

n = any positive integer greater than zero

λ_s = the wavelength of the infrared radiation spectrum in vacuum emitted by the radiant energy source within the optical coating, and



N_c = the index of refraction of the material comprising the optical coating,

the first optical coating having a disc configuration when disposed on the major surface more distant from the radiant energy source and enhancing the re-radiation of a predetermined range of the radiation spectrum from the body, and

the optical coating has a preferred thickness t_1 which is equal to a multiple of one-fourth of the wavelength λ_B within the optical coating of the most intense portion of the radiation spectrum re-radiated from the body of semiconductor material when exposed to infrared radiation and is defined as follows:

$$t_1 = (2n-1)\lambda_B/4N_c$$

wherein

t_1 = is the thickness of the second optical coating

n = any positive integer greater than zero

λ_B = a wavelength in a vacuum of the infrared spectrum emitted by the body through the major surface upon which the optical coating is disposed, and

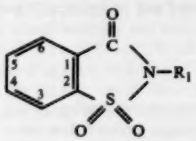
N_c = the index of refraction of the material comprising the optical coating.

4,135,028
PROCESS FOR FIREPROOFING SYNTHETIC FIBER MATERIALS WITH SULPHONAMIDES

Armin Hiestand, Binningen, and Peter Rohringer, Schonenbuch, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

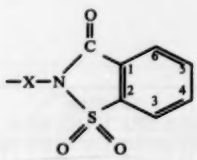
Filed Jun. 20, 1977, Ser. No. 808,005
Claims priority, application Switzerland, Jun. 25, 1976, 8154/76
Int. Cl.[2] B32B *27/36;* **B05D** *3/02;* **C09D** *5/18;* **C09K** *3/28*
U.S. Cl. 428—253 **12 Claims**

1. A process for fireproofing fiber materials made from polyester, which comprises treating these materials with a preparation containing a sulphonamide of the formula



(I)

wherein R_1 is phenyl, phenylethyl, benzyl or cyclohexyl, alkyl with 1 to 8 carbon atoms which is unsubstituted or substituted by hydroxyl, ethoxy or methoxy, or hydrogen, or R_1 is a radical of the formula

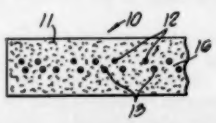


wherein X is ethylidene or methylene,
and if R_1 is hydrogen the sulphonamide can also be present in the form of a hydrazonium methylammonium, dimethylammonium, ethylammonium or unsubstituted ammonium salt; and drying the material treated in this manner at 70° to 100° C., and subsequently subjecting it to a thermosol treatment at 150° to 220° C.

4,135,029
FIBERGLASS MAT

John R. Pfeffer, Bakersfield, Calif., assignor to Consolidated Fiberglass Products Co., Bakersfield, Calif.

Continuation-in-part of Ser. No. 681,422, Apr. 29, 1976, abandoned. This application Jan. 11, 1978, Ser. No. 868,725
Int. Cl.[2] B32B *17/00*
U.S. Cl. 428—284 **18 Claims**



1. A fiberglass mat comprising
a base formed by a wet process and having dispersed glass fibers bonded together by a bonding agent, said base having
a top surface and
a bottom surface,
at least one distinct and separated layer of randomly oriented fiberglass strands within said base and located within a predetermined first plane intermediate said top surface and said bottom surface, and
at least one distinct and separated layer of substantially longitudinally oriented fiberglass strands within said base and located within a predetermined second plane intermediate said top surface and said bottom surface, said first and second planes being substantially parallel to one another and separated by glass fibers and bonding agent in said base.

4,135,030
TUNGSTEN IMPREGNATED CASTING MOLD

Malcolm Basche, deceased, late of West Hartford, Conn. (by Joyce O. Basche, heir), assignor to United Technologies Corporation, Hartford, Conn.

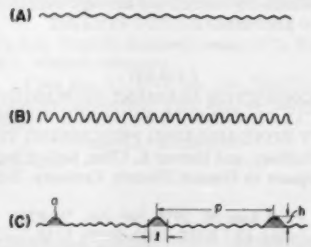
Filed Dec. 23, 1977, Ser. No. 863,838
Int. Cl.[2] B32B *1/06, 3/26*
U.S. Cl. 428—304 **5 Claims**

5. A tungsten impregnated ceramic mold useful for casting reactive metals consisting of:
a porous ceramic mold whose internal pores and passages are coated with a thin layer of a material selected from the group consisting of metallic tungsten, tungsten oxide, tungsten suboxides, and mixtures thereof, said mold being electrically conductive.

4,135,031
MAGNETIC RECORDING SUBSTANCE

Goro Akashi; Masaaki Fujiyama, and Masahiro Utumi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Feb. 24, 1977, Ser. No. 771,547
Claims priority, application Japan, Feb. 24, 1976, 51-18491
Int. Cl.[2] B32B *5/16*
U.S. Cl. 428—323 **12 Claims**



1. A magnetic recording substance comprising a non-magnetic support film having a magnetic recording layer on one side and a back coating comprising a thin layer of a resinous binder having dispersed therein a mixture of inorganic powders comprising as a major component an inorganic powder having grain size of 0.02–5 microns and as a minor component an inorganic powder having a grain size of 2–40 **microns, said minor component forming with said major component and binder on said film a coating having spike grains extending outwardly from the non-magnetic surface to a height of** 0.8–5 **microns at a pitch of at least** 200 microns to yield a tape having a coefficient of friction of at least 0 on 25.

4,135,032

MAGNETIC RECORDING MEDIUM

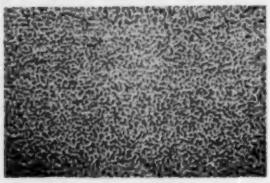
Goro Akashi; Masaaki Fujiyama, and Yasuyuki Yamada, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 579,163, May 20, 1975, abandoned, which is a continuation-in-part of Ser. No. 559,457, Mar. 18, 1975, abandoned, which is a continuation-in-part of Ser. No. 365,653, May 31, 1973, abandoned. This application Sep. 21, 1977, Ser. No. 835,376

Claims priority, application Japan, May 31, 1972, 47-54495

Int. Cl.[2] G11B *5/78*

U.S. Cl. 428—328 10 Claims



1. A magnetic recording medium comprising a non-magnetizable plastic film support having a magnetic recording layer on one side thereof and, on the other side thereof, a layer containing (1) at least one powder selected from the group consisting of carbon black and graphite, and (2) at least one powder composed of a light colored pigment, and (3) a binder, powders (1) and (2) forming coplanarly divided continuous dark color areas and discontinuous light color areas in the layer containing same, said layer being a back surface layer and having a dry thickness ranging from about .1 to about 10 microns and being obtained from an organic solvent dispersion by agitating said organic solvent dispersion for 10 to 200 hours at 100 rotations per minute before coating onto said plastic film support:

the dark color areas being so colored due to the presence of the at least one powder selected from the group consisting of carbon black and graphite and the light color areas being so colored due to the presence of the light colored pigment;

the dark color area/light color area ratio being from 80/20 to 20/80%, by square ratio;

each divided color area covering a 3 to 500 sq. micron area; and

the back surface layer having a surface electrical resistance below 1×10^{10}ohm/cm^2 where said back surface layer has been formed by coating on said support a single coating solution which is a dispersion of said powders in a solution of said binder in an organic solution and drying.

4,135,033

HEAT-ACTIVATED ADHESIVE COATING

William R. Lawton, 6651 Jewett-Holmwood Rd., Orchard Park, N.Y. 14127

Filed Feb. 16, 1977, Ser. No. 769,385

Int. Cl.[2] B32B *15/00;* C09J *7/02*

U.S. Cl. 428—344 17 Claims

1. A two-layer coating activatable to adhesiveness by heat, comprising

a base layer carried adjacent a substrate and comprising a viscid material, and

a dry, non-tacky barrier layer carried by said base layer externally thereof and comprising a molecular complex dissociable above a temperature in the range of from about 35° C. to about 280° C., said molecular complex being selected from the group consisting of molecular complexes of phenols listed in Table I and amines listed in Table I; molecular complexes of urea and substituted and unsubstituted normal aliphatics having at least 8 carbon atoms; molecular complexes of urea and normal unbranched olefins having at least 8 carbon atoms; molecular complexes of thiourea and substituted and unsubstituted branched aliphatics having at least 8 carbon atoms; and molecular complexes of thiourea and branched olefins having at least 8 carbon atoms,

whereby upon heating said coating above a dissociation temperature in the range of from about 35° C. to about 280° C. said base and barrier layers merge to form an adhesive coating.

4,135,034

SEWING THREAD CONTAINING A FLAME RETARDANT LUBRICANT

Jefferson L. Claiborne, Hexson, Tenn., assignor to Dixie Yarns, Inc., Chattanooga, Tenn.

Continuation of Ser. No. 657,058, Feb. 11, 1976, Pat. No. 4,054,715, which is a continuation-in-part of Ser. No. 612,546, Sep. 11, 1975, abandoned, which is a continuation of Ser. No. 455,362, Mar. 27, 1974, abandoned. This application Jun. 1, 1977, Ser. No. 802,560

The portion of the term of this patent subsequent to Oct. 25, 1994, has been disclaimed.

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—375 6 Claims

1. A flame-retardant sewing thread, comprising a sewing thread having applied thereto a flame-retardant lubricant selected from the group consisting of straight chain mono- and di- chloro alkanes having from 10 to about 30 carbon atoms.

4,135,035

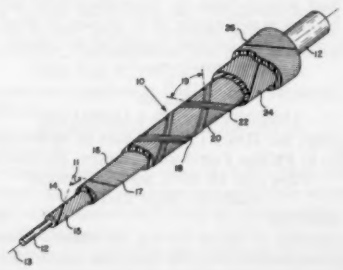
LAMINATED COMPOSITE GOLF CLUB SHAFT

Kenneth E. Branen, Hudson, and Gall, John J., Salem, both of N.H., assignors to Avco Corporation, Wilmington, Mass.

Continuation-in-part of Ser. No. 688,338, May 20, 1976, abandoned. This application Nov. 18, 1977, Ser. No. 852,777

Int. Cl.[2] A63B *53/10;* D02G *3/00*

U.S. Cl. 428—377 6 Claims



1. A laminated composite golf club shaft comprising a first composite winding having at least two composite layers, each such composite layer having a single layer of filaments, the filaments in adjacent layers being wound in opposite directions;

a second composite winding covering said first composite winding having filaments oriented longitudinally parallel to the surface formed by said first composite winding;

a third composite winding superimposed over said second composite winding having at least two layers of composite materials which do not cover the surface formed by said longitudinal winding, each of said layers having a single

layer of filaments, the filaments in adjacent layers being wound in opposite directions; and

a fourth composite winding superimposed over the third composite winding, said fourth composite winding being similar in structure to said first composite winding and covering the entire surface of said third composite winding.

4,135,036

PROCESS FOR PRODUCTION OF MAGNETIC RECORDING MEDIA AND RECORDING MEDIA

Yoshito Mukaida; Yasuyuki Yamada, both of Odawara; Shinichi Hirayama, Sagamihara; Hiroshi Suzuki, and Yutaka Asakawa, both of Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara and Asahi Denka Kogyo K.K., Tokyo, both of, Japan

Filed Dec. 29, 1976, Ser. No. 755,303

Claims priority, application Japan, Dec. 29, 1975, 50/159258

Int. Cl.[2] H01F *10/02*

U.S. Cl. 428—413 **26 Claims**

1. In a process for producing a magnetic recording medium with a magnetic recording layer comprising coating a magnetic coating composition comprising a ferromagnetic powder, a binder, and a predominantly aqueous coating solvent on a non-magnetic support and drying, the improvement which comprises said binder contains a water-soluble of water-dispersible amide compound selected from the group consisting of (1) an amide compound obtained by reacting an aliphatic carboxylic acid and/or a derivative thereof with a polyamino compound; (2) an acryl-modified amide compound obtained by reacting said amide compound (1) with acrylic acid, methacrylic acid, and/or a derivative thereof; (3) an epoxy-modified amide compound obtained by reacting said amide compound (1) with an epoxy compound; (4) an acryl-epoxy-modified amide compound obtained by reacting said amide compound (1) with acrylic acid, methacrylic acid and/or a derivative thereof and and epoxy compound: (5) an amide compound obtained by reacting a maleic acid-modified unsaturated aliphatic carboxylic acid compound and a polyamino compound: (6) an epoxy-modified amide compound obtained by reacting said amide compound (5) with an epoxy compound: (7) an amide compound obtained by reacted a mixture of a maleic acid-modified unsaturated aliphatic carboxylic acid compound and an aliphatic carboxylic acid and/or a derivative thereof: and (8) an epoxy-modified amide compound obtained by reacting said amide compound (7) with an epoxy compound, wherein said water-soluble or water-dispersible amide compound is present in said binder in an amount of about 30% by weight or more based on total weight of the binder.

4,135,037

ADHESIVES AND LAMINATES

Kishore Udipi, and Henry L. Hsieh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1977, Ser. No. 806,655

Int. Cl.[2] B32B *25/16*

U.S. Cl. 428—414 **18 Claims**

1. A plurality of layers having an adhesive composition consisting essentially of (1) at least one epoxidized rubbery copolymer of a conjugated diene and a monovinylarene having a conjugated diene/monovinylarene weight ratio of 45/55 to 95/5 and a weight average molecular weight of about 15,000 to 350,000 and wherein the extent of epoxidation, as defined by the ratio of olefinic double bonds modified by the epoxidation reaction to the number of initial double bonds, ranges from 5 to 80 percent and (2) at least one rosin-based tackifier between adjacent surfaces thereof as a bonding material therefor.

12. An adhesive composition consisting essentially of (1) at least one epoxidized rubbery copolymer of a conjugated diene and a monovinylarene having a conjugated diene/monovinylarene weight ratio of 45/55 to 95/5 and a weight average molecular weight of about 15,000 to 350,000 and wherein the extent of epoxidation, as defined by the ratio of olefinic double bonds modified by the epoxidation reaction to the number of initial double bonds, ranges from 5 to 80 percent and (2) at least one rosin-based tackifier.

4,135,038

SEAL STRUCTURE OF CERAMICS AND LOW EXPANSION METALLIC MATERIAL

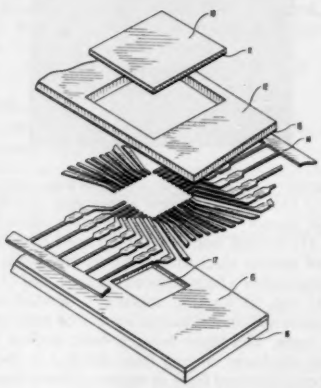
Akio Takami; Kazuo Kondo, and Kazutoshi Tanaka, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 20, 1977, Ser. No. 862,326

Claims priority, application Japan, Dec. 20, 1976, 51-153146

Int. Cl.[2] B32B *17/06, 15/04*

U.S. Cl. 428—427 **7 Claims**



1. A seal structure of ceramics and a low-expansion metallic material, comprising a high alumina ceramics having an Al_2O_3 content of 65 to 92% by weight and a low-expansion metallic material bonded to each other by a low-melting glass consisting of 60 to 85% by weight of a low-melting glass frit of the lead borate type, 10 to 30% by weight of β-eucryptite having a particle size of 40μm or less and 0.5 to 15% by weight of zircon having a particle size of 10μm or less, the total proportion of the glass ingredients being 100% by weight.

4,135,039

ELECTRODE STRUCTURES AND ELECTRODES THEREFROM FOR USE IN ELECTROLYTIC CELLS OR BATTERIES

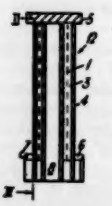
Jonathan M. Jenkins, Sevenoaks, England, assignor to Unigate, Limited, London, England

Continuation of Ser. No. 244,795, Apr. 17, 1972, abandoned, which is a continuation of Ser. No. 12,279, Feb. 18, 1970, abandoned. This application Jun. 7, 1977, Ser. No. 804,215

Claims priority, application United Kingdom, Feb. 21, 1969, 9548/69

Int. Cl.[2] H01M *4/64, 4/96*

U.S. Cl. 429—27 **28 Claims**



1. A rechargeable zinc-halogen electric cell comprising:

(a) a casing;

(b) storage means external to said casing for storing molecular halogen;

(c) at least one halogen electrode structure located within said casing comprising an apertured substrate consisting essentially of an anodizable metal selected from the group consisting of Groups IV(A) and V(A) of the Periodic Table according to Mendeleef and having an inherent oxide layer thereon, said substrate having permanently associated therewith at least one coherent permeable stratum of a mixture of substantially porous carbon and a polymeric binder, said electrode structure having been produced by pressing said mixture of porous carbon and binder at a pressure of at least 2 tons psi onto said substrate to provide a flexible halogen electrode structure, said halogen electrode structure being adapted to provide a space therein in communication with said external storage means for molecular halogen into and through which space molecular halogen can move;

(d) at least one metal bearing anode structure located within said casing including a zinc-containing material supported on an electrically conducting substrate; and

(e) positive and negative electric conductors leading from said electrode structures to terminals accessible to the outside of said casing; said casing being adapted to hold a body of liquid and flowable zinc halide electrolyte in contact with each of said electrode structures.

4,135,040

SOLID ION-CONDUCTIVE ELECTROLYTE BODY AND METHOD OF FORMING

Roy F. Thornton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 20, 1977, Ser. No. 862,535

Int. Cl.[2] H01M *6/18*

U.S. Cl. 429—191 **5 Claims**

1. A solid ion-conductive electrolyte body comprises a solid ion-conductive electrolyte portion with opposite major faces, a textured surface on at least one major face of the body thereby providing an increased surface area, and the textured surface with a plurality of alternating dimples and depressions.

4,135,041

DUST REDUCTION FOR ELECTRODE PLATES

Margarete Jung, Kelkheim; Ernst Voss, Liederbach, and Tsvetko Chobanov, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Varta Batterie Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1978, Ser. No. 885,601

Claims priority, application Fed. Rep. of Germany, May 27, 1977, 2723947

Int. Cl.[2] H01M *4/56*

U.S. Cl. 429—225 **8 Claims**

1. A lead electrode plate for lead storage batteries whose surface is provided with a dust fixating coating wherein

the coating includes sodium silicate as a film forming component.

4,135,042

REDUCTION OF SCORCHING IN POLYURETHANE FOAM

Donald L. Lickei, Wallingford, and Clifford J. Maxwell, New Haven, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 18, 1977, Ser. No. 843,184

Int. Cl.[2] C08K *5/52*; C08G *18/14, 18/48*

U.S. Cl. 521—107 **13 Claims**

1. In a process for making polyurethane foam from a reaction mixture comprised of a polyether polyol, an organic polyisocyanate, a foaming agent and a halogenated phosphate polyester additive represented by the formula:

$$R'X_a[OP(OR'')_2]_n$$

wherein

R' is an aliphatic hydrocarbon having 1–8 atoms or an aromatic hydrocarbon radical having 6–14 carbon atoms,

X is a halogen selected from chlorine, bromine, and a mixture thereof,

a is an integer of 0–4,

n is an integer of 2–6, and

each R'' is a haloalkyl radical having 1–8 carbon atoms, the halogen in this radical being chlorine, bromine, or a mixture thereof,

the improvement which comprises including in said reaction mixture a scorch-inhibitive amount of an aliphatic phosphite selected from cyclic and acyclic aliphatic phosphites.

4,135,043

PROCESS FOR PREPARING POLYMERS IN POWDER FORM

Bernd Kast, Ludwigshafen; Joachim Stedefeder, Lampertheim; Axel Sanner, Frankenthal; Hans-Uwe Schenck, Wachenheim; Richard Thoma, Battenberg, and Hermann Fischer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Aug. 1, 1977, Ser. No. 820,720

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1976, 2636243

Int. Cl.[2] C08F *2/10, 20/06, 20/70*

U.S. Cl. 526—63 **10 Claims**

1. A process for the manufacture of a hydrophilic polymer in powder form from one or more water-soluble ethylenically unsaturated compounds which form the hydrophilic polymer, which process comprises:

dissolving or emulsifying the ethylenically unsaturated monomer(s) in water to form an aqueous solution or emulsion containing from 30 to 90% by weight of monomer, based on the solution or emulsion;

introducing the aqueous solution or emulsion into a polymerization zone by spraying; and

polymerizing the monomer(s) in said polymerization zone at a temperature of from about 20° to 150° C. in a powder bed of a hydrophilic polymer and/or an inert inorganic material in powder form in the presence of an effective amount of a polymerization initiator and water as an auxiliary liquid, wherein the water is entirely or partially removed from the polymerization zone by evaporation during the polymerization.

4,135,044

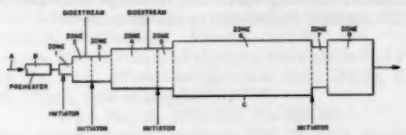
PROCESS FOR ACHIEVING HIGH CONVERSIONS IN THE PRODUCTION OF POLYETHYLENE

Charles D. Beals, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 822,639, Aug. 8, 1977, abandoned, which is a continuation of Ser. No. 736,513, Oct. 28, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 840,870

Int. Cl.[2] C08F *110/02, 4/30, 4/34, 4/04*

U.S. Cl. 526—64 **12 Claims**



1. In a process for producing polyethylene in an elongated tubular reactor having an inlet and an outlet, at a pressure of about 20,000 psi to about 60,000 psi comprising passing the reaction mass through a plurality of reaction zones at a flow number of at least about 3.3 ft^2/sec., each reaction zone followed by a cooling/repreparation zone, and wherein free radical producing substance is injected at the beginning of each reaction zone, the improvement comprising adding at least one additional final reaction zone and cooling zone and decreasing the operating temperatures in the previous reaction zones whereby there is obtained at least a 28% conversion of ethylene to polyethylene while maintaining product haze value.

4,135,045

PROCESS FOR POLYMERIZATION OF OLEFINS AND CATALYST COMPOSITION THEREFOR

Norio Matsuzawa, Ohtake; Hidesaburo Oi, Waki; Hiroshi Nishimura; Shigeru Wada, both of Ohtake, and Juntaro Sasaki, Iwakuni, all of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 185,378, Sep. 30, 1971, Pat. No. 4,048,415. This application Sep. 1, 1976, Ser. No. 719,440

Claims priority, application Japan, Oct. 2, 1970, 45-85930

Int. Cl.[2] C08F *4/66, 10/06*

U.S. Cl. 526—114 **27 Claims**

1. A process for the polymerization of alpha-olefins which comprises,

polymerizing or copolymerizing one or more alpha-olefin monomers in the presence of a catalyst, said catalyst consisting essentially of:

(A) a titanium trichloride composition and

(B) an organoaluminum compound; said titanium trichloride composition (A) obtained by

(a) mechanically pulverizing

(i) a titanium trichloride component prepared by reduction of titanium tetrachloride with hydrogen, silicon, metallic titanium or metallic aluminum,

(ii) in the presence of a complex of aluminum chloride or aluminum bromide with an electron-donor in an amount of from 0.005 to 0.5 mol per mol of said titanium trichloride component (i), said electron-donor being selected from the group consisting of

(1) a nitrogen-containing organic compound selected from the group consisting of saturated aliphatic primary amines having 1–18 carbon atoms, saturated aliphatic secondary amines having 2–24 carbon atoms, saturated aliphatic tertiary amines having 3–18 carbon atoms, aromatic amines having 6–20 carbon atoms, and heterocyclic amines having 5–18 carbon atoms; and

(2) a phosphorus-containing organic compound selected from the group consisting of trialkyl phosphines having 3–21 carbon atoms, triaryl phosphines having 18–21 carbon atoms, trialkyl phosphites having 3–24 carbon atoms, triaryl phosphites having 18–24 carbon atoms, and hexaalkyl phosphoramides having 1–4 carbon atoms in each alkyl group; and

(b) extracting the micro-pulverized titanium trichloride component with an extracting medium comprising a solvent selected from the group consisting of saturated aliphatic hydrocarbons having 3 to 20 carbon atoms, aromatic hydrocarbons having 6 to 20 carbon atoms and halogenated aromatic hydrocarbons having 6 to 16 carbon atoms and 0.005–0.5 mol per mol of the micro-pulverized titanium trichloride component (i) to be extracted of a nitrogen-containing organic polar compound selected from the group consisting of saturated aliphatic secondary amines having 2 to 24 carbon atoms, saturated aliphatic tertiary amines having 3–18 carbon atoms, aromatic amines having 6–20 carbon atoms, heterocyclic amines having 5–18 carbon atoms, aromatic monoisocyanates having 7–11 carbon atoms and aromatic azo compounds having 12–20 carbon atoms which may have a hydrocarbon group or halogen atoms as a substituent.

4,135,046

HIGH EFFICIENCY CATALYSTS FOR OLEFIN POLYMERIZATION

James J. Harris, Pittsburgh, and Richard E. Hammond, Irwin, both of Pa., assignors to Arco Polymers, Inc., Philadelphia, Pa.

Filed Feb. 28, 1977, Ser. No. 772,875

Int. Cl.[2] C08F *4/66, 10/02*

U.S. Cl. 526—137 **3 Claims**

1. A catalyst for the polymerization of ethylene consisting essentially of the product from the steps of (1) reducing a first increment of tetrabutyltitanate with a mixed magnesium-aluminum alkyl of formula $R_2Mg.2AlR'_3$, where R and R′ may be the same or different alkyl groups having from 1 to 20 carbon atoms; (2) adding hydrogen chloride to the reaction product from (1) in an amount of about 2 moles of chloride per mole of mixed magnesium aluminum alkyl to deactivate any excess magnesium alkyl; and (3) adding a second increment of tetrabutyltitanate; said first and second increments of tetrabutyltitanate being selected such that the mole ratio of first to second increments is between 6:1 and 0.33:1; and said mixed magnesium alkyl being added in step (1) in an amount such that the mole ratio of magnesium alkyl to total titanate is between 50:1 and 350:1.

4,135,047

PREPARATION OF THIOETHERS USING A BENZOPINACOL INITIATOR

Charles R. Morgan, Brookeville, Md., assignor to W. R. Grace & Co., New York, N.Y.

Continuation-in-part of Ser. No. 790,796, Apr. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 651,365, Jan. 22, 1976, Pat. No. 4,020,233. This application Mar. 23, 1978, Ser. No. 889,794

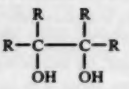
Int. Cl.[2] C07D *251/30;* **C07C** *53/22, 149/18, 149/20*

U.S. Cl. 544—219 **4 Claims**

1. The process of forming a thioether which comprises reacting a thiol-containing compound of the formula: $R_1(CH_2)_nSH$, wherein n is 1 to 6; R_1 is a member of the group consisting of

$$-OH, -\overset{O}{\overset{\|}{C}}OH \text{ and } -\overset{O}{\overset{\|}{C}}OR_2$$

and R_2 is an alkyl containing 1 to 6 carbon atoms with the proviso that, when R_1 is —OH, n is 2 to 6, across the double bond of an ethylenically unsaturated compound in the presence of an initiator comprising a pinacol of the formula:



wherein R is phenyl or substituted phenyl, said substituents being members of the group consisting of halogen, alkyloxy and alkyl, said alkyloxy and alkyl containing 1 to 6 carbon atoms.

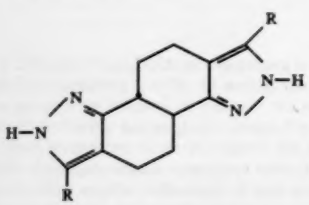
4,135,048

ANAPHYLACTIC INHIBITING TRANS-OCTAHYDRONAPHTO[1,2-c:5,6-c'] DIPYRAZOLES

Victor E. Marquez, Caracas, Venezuela, assignor to Laboratorios Cosmos S.A., Caracas, Venezuela

Filed May 17, 1977, Ser. No. 797,870
Int. Cl.[2] C07D *231/56*
U.S. Cl. 548—369 **2 Claims**

1. A compound of the formula



wherein R is H, OH, CN, CO_2Me, CO_2Et, CO_2H, CF_3, halogen, NO_2 or NH_2.

4,135,049

SULFONYL CARBAZATES AS BLOWING AGENTS

Byron A. Hunter, Woodbridge, Conn., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 599,304, Jul. 25, 1975, Pat. No. 4,012,432, which is a division of Ser. No. 476,752, Jun. 5, 1974, Pat. No. 3,925,270. This application Nov. 19, 1976, Ser. No. 743,209
Int. Cl.[2] C07C *143/83*
U.S. Cl. 560—13 **12 Claims**

1. A sulfonyl carbazate having the formula

$$\begin{matrix} R{-}SO_2{-}NHNH{-}COO{-}Y'{-}OOC{-}NHN{-} \\ H{-}SO_2{-}R \end{matrix}$$

wherein the R substituents are the same or different and are alkyl having 1 to 12 carbon atoms, alkenyl having 2 to 12 carbon atoms, aryl, aralkyl, or alkaryl having 6 to 10 carbon atoms, or cycloalkyl having 5 to 8 carbon atoms; and wherein Y' is alkylene having 2 to 12 carbon atoms, arylene or alkarylene having 6 to 12 carbon atoms, or a group of the formula

$$-R^2-Z-R^3-$$

wherein Z is a single bond connecting R^2 and R^3, —O—, —S—, —SO—, $—SO_2—$, NR^4— wherein R^4 is hydrogen or an alkyl group with 1 to 4 carbon atoms, or Z is alkylene having 1 to 6 carbon atoms or alkylidene having 2 to 3 carbon atoms, and wherein R^2 and R^3 are the same or different and are alkylene having 2 to 4 carbon atoms or phenylene.

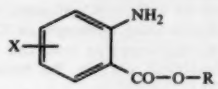
4,135,050

PROCESS FOR PREPARING ANTHRANILIC ACID ESTERS

Peter Hess, Hofheim am Taunus, and Bernhard Mees, Ehlhalten, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

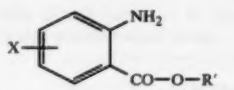
Filed Aug. 11, 1977, Ser. No. 823,848
Claims priority, application Fed. Rep. of Germany, Aug. 13, 1976, 2636423
Int. Cl.[2] C07C *79/46, 101/54*
U.S. Cl. 560—19 **10 Claims**

1. In a process for the preparation of an anthranilic ester of the formula I



I

in which R is alkyl of 2 to 5 carbon atoms and X is hydrogen, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or nitro, by transesterifying an ester of the formula II



II

in which X is defined as above and R' is alkyl of 1 to 5 carbon atoms, with an alcohol of the formula III

$$R - OH \qquad III$$

in which R is defined as above, by splitting off an alcohol of the formula IV

$$R' - OH \qquad IV$$

in which R' is as defined above, the alcohol of the formula IV being split off having a lower boiling point than the alcohol of the formula III, with the aid of an alkaline transesterification catalyst, the improvement comprising catalyzing said transesterification with potassium carbonate.

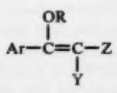
4,135,051

PROCESS FOR PREPARING ARYLALKANOIC ACID DERIVATIVES

Jerry A. Walker, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 16, 1977, Ser. No. 807,032
Int. Cl.[2] C07C *67/00, 69/76*
U.S. Cl. 560—105 **14 Claims**

1. In a process which comprises reacting an enol ether of the formula



(III)

with trivalent thallium ions in an organic liquid containing at least one equivalent of an alcohol or water at a temperature of from about −25° C. to about reflux temperature of the mixture for a time sufficient to form a 2-aryl-C_3 to C_6-alkanoate ester of the formula

(I)

wherein in each formula Ar is the aromatic moiety of a useful acid product containing from 6 to 13 carbon atoms, in which the aryl ring portion of the aromatic moiety is a phenyl, phenoxyphenyl, naphthyl or biphenylyl group bonded to the carbon atom adjacent to the carboxyl ester moiety at an aryl ring carbon;

R is C_1 to C_4-alkyl, benzyl, phenyl, tris-(C_1 to C_3-alkyl)silyl; and R' is equal to R or is an alkyl, benzyl, or phenyl) group derived from the solvent medium;

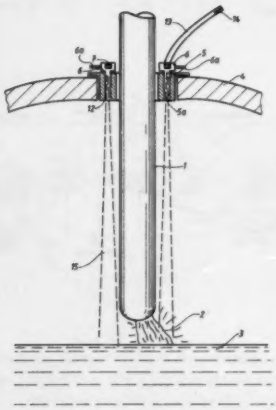
Y and Z denote the residue of a C_3 to C_6-alkanoic acid moiety with each of Y and Z being hydrogen or C_1 to C_4-alkyl, with Y and Z having a total of from one to 4 carbon atoms, the improvement wherein the trivalent thallium ions needed for further reaction with enol ether are generated from a monovalent thallium salt of an organic carboxylic acid having a pKa above about 2, contained in the mixture, by providing (a) a perorganic acid having a pKa above about 2 in an amount at least about stoichiometrically equivalent to the monovalent thallium content in the mixture in the presence of (b) a reactive form of a metal selected from the group consisting of at least one of manganese, ruthenium, cobalt, iridium, hafnium, osmium and neobium, said non-thallium reactive metal form being provided in a sufficiently soluble form and in an amount sufficient to promote oxidation of monovalent thallium ions to the trivalent thallium valence state, followed by re-combination of further quantities of said enol ether and said trivalent thallium ion mixture to form additional quantities of said 2-aryl-C_3 to C_6-alkanoate ester.

4,135,052

DC ARC FURNACE ARC CONTROL

Sven-Einar Stenkvist, and Björn Widell, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Oct. 3, 1977, Ser. No. 838,454
Claims priority, application Sweden, Oct. 4, 1976, 7610952
Int. Cl.[2] H05B *7/00*
U.S. Cl. 13—11 **5 Claims**



1. A DC arc furnace control comprising a furnace having a hearth for containing a melt, an arcing electrode positioned above the melt for forming an arc with the melt when placed in circuit therewith, and magnetic means for applying a magnetic field to the arc so as to control the arcing direction; wherein the improvement comprises optical means for optically detecting angular reflections of said arc, for controlling said magnetic means and said furnace has a roof through which said electrode depends and said optical means comprises at least one arc radiation responsive device receiving arc radiation at a position adjacent to said roof and beside said electrode and having means for restricting the field of view of the device to an area adjacent to the electrode's tip.

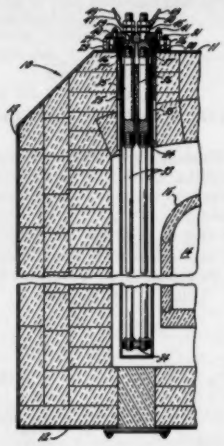
4,135,053

HEATING ASSEMBLY FOR A HEAT TREATING FURNACE

William W. Kastilahn; Robert R. Garrett, and Vernon L. Park, all of Rockford, Ill., assignors to Alco Standard Corporation, Valley Forge, Pa.

Filed Dec. 23, 1977, Ser. No. 863,805
Int. Cl.[2] H05B *3/62*; F27D *11/02*
U.S. Cl. 13—25 **5 Claims**

5. A heating assembly comprising a closed tube, an electrical resistance heating element disposed in said tube, a source of protective gas, an inlet valve which is operable when opened to admit gas from said source into said tube and which is operable when closed to cut off the flow of gas from said source to said tube, an exhaust valve which is operable when opened to vent gas out of said tube and which is operable when closed to cut off the flow of gas out of said tube, and means for sensing the pressure in said tube and for causing said inlet valve to be opened and said exhaust valve to be closed when said pressure is below a predetermined range, for causing said inlet valve to be closed and said exhaust valve to be opened when said pressure is above said predetermined range and for causing both of said valves to be closed when said pressure is within said predetermined range.

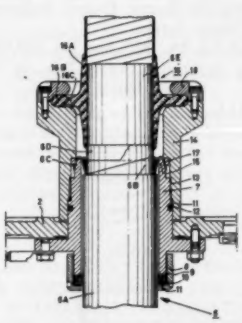


4,135,054

HIGH VOLTAGE CABLE FITTING WITH A SEALING MEMBER

Theodoris H. A. Vloedman, Vlaardingen, Netherlands, assignor to N.K.F. Kabel B.V., Delft, Netherlands

Filed May 2, 1977, Ser. No. 793,037
Claims priority, application Netherlands, May 5, 1976, 7604762
Int. Cl.[2] H02G *15/04, 15/22*
U.S. Cl. 174—19 **2 Claims**



1. In a cable fitting for connecting an insulated electric cable having a cylindrical surface, a cable being inserted into the fitting, the fitting having a fastening part bounding a space which is filled with a dielectric fluid medium, and a sealing member formed of elastic material for making a dielectric-fluid-tight seal between said part and said cylindrical surface,

the improvement wherein the sealing member is a unitary element consisting of a cylindrical portion which is elastically fitted over said cylindrical surface, and a radially extending flange, said flange having an outer annular clamping portion having two sides and an intermediate portion between the clamping portion and the cylindrical portion,

said fastening part is arranged so as to abut one side of said clamping portion only of the sealing member, and

said fitting includes a clamping part arranged to abut said clamping portion only at the other side, and means for axially fastening said clamping part to said fastening part so as to exert clamping pressure therebetween on said annular clamping portion.

4,135,055

DEVICE FOR FIREPROOFING ELECTRIC CONDUCTORS

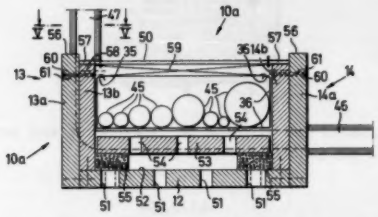
Richard Beckers, Dusseldorf; Wedigo V. Wedel, Cologne, and Manfred Monheimius, Erkrath, all of Germany, assignors to Promat Gesellschaft fur moderne Werkstoffe mbH & Co. KG, Dusseldorf, Germany

Filed Oct. 8, 1976, Ser. No. 730,717

Claims priority, application Fed. Rep. of Germany, Oct. 8, 1975, 7531903[U]; Nov. 6, 1975, 2549810; Jun. 4, 1976, 2625173

Int. Cl.[2] H02G *3/04*

U.S. Cl. 174—48 **24 Claims**



1. A device for fireproofing electric conductors, comprising a casing enclosing the conductors, said casing including non-combustible fire-resistant wall panels, at least one of said wall panels including apertures, and means for closing the apertures in said one wall panel in the event of a fire.

4,135,056

REMOTE CONTROL CABLE

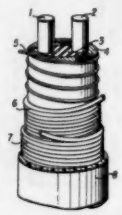
Pierre Seguin, Pont-de-Cheruy, France, assignor to Chavanoz SA, Pont-de-Cheruy, France

Filed Feb. 16, 1977, Ser. No. 769,338

Claims priority, application France, Feb. 16, 1976, 76 04378

Int. Cl.[2] H01B *11/02*

U.S. Cl. 174—113 C **4 Claims**



1. A remote control cable comprising two conducting wires separated and held by a central element, reinforcing wires parallel to the said conductors, at least one layer of lapping covering these elements and at least one external coating layer, the improvement characterized by: the central element being a continuous element comprising two longitudinal recesses arranged symmetrically relative to a central solid portion, each recess enclosing a conductor over more than half of its periphery, the remainder of the periphery forming a free surface, the external surface of the central element forming with each of the free surfaces of each of the conductors a continuous surface of generally elliptical cross-sectional shape, said reinforcing wires forming an elliptical cross-sectional recess enclosing the continuous surface and enclosing each conductor over less than half of its periphery.

4,135,057

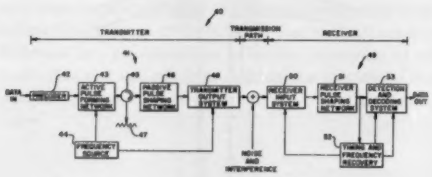
HIGH DENSITY DIGITAL TRANSMISSION SYSTEM

Jon W. Bayless, Sr.; Robert D. Pedersen, and John C. Bellamy, II, all of Dallas, Tex., assignors to Arthur A. Collins, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 721,329, Sep. 7, 1976, abandoned. This application Dec. 5, 1977, Ser. No. 857,753

Int. Cl.[2] H04B *1/62*

U.S. Cl. 178—67 **53 Claims**



1. In a band limited high density digital transmission system operating in combination with input and output signal processing means, the combination which comprises:

(a) a transmitter adapted to be connected to said input processing means,

(b) a receiver adapted to be connected to said output processing means,

(c) said transmitter including a modulator having an active pulse forming network and a bandlimiting passive pulse shaping network and said receiver including a detector having a bandlimiting passive pulse shaping network, said networks including means to produce specified output pulse shapes from receiver input pulses, with said receiver input pulse shapes generated by said transmitter passive pulse shaping network operating on specified input pulse shapes generated by said transmitter active pulse shaping network,

(d) the signal channel comprising said transmitter and receiver having a channel function $H_c(j\omega)$ which is the Fourier transform of the desired output pulse in accordance with the relation

$$H_c(j\omega) = H_{TX}(j\omega)H_{RX}(j\omega),$$

said bandlimiting passive pulse shaping network of said receiver having the function H_{RX} which is the complex conjugate of the function H_{TX}, where

$$H_{TX}(j\omega) = |H_c(j\omega)|^{\frac{1}{2}}e^{j\theta(\omega)}$$

and

$$H_{RX}(j\omega) = |H_c(j\omega)|^{\frac{1}{2}}e^{-j\theta(\omega)}$$

wherein

$H_{TX}(j\omega)$ is the product of the transmitter active pulse forming network pulse function, $P(j\omega)$, and the transfer function of the passive pulse shaping network, $H_T(j\omega)$, as

$$H_{TX}(j\omega) = P(j\omega)H_T(j\omega)$$

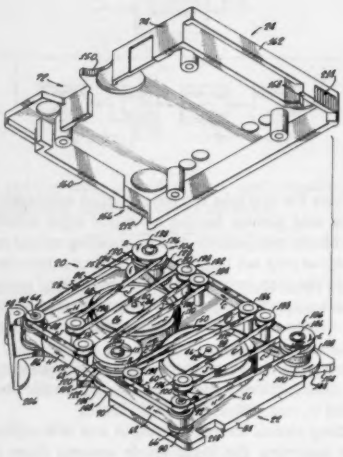
the transmitter and receiver pulse shaping networks both being specified by network poles and residues and time domain optimized for achieving specified input-to-output pulse shape transformation and minimizing adjacent channel interference where said transmitter and receiver passive pulse shaping networks are integral parts of the system modulation and detection means.

4,135,058

DUAL TAPE TRANSPORT SYSTEM WITH RELATED METHOD AND MEANS FOR REDUCING CUEING TIME

Robert F. Pfost, Los Altos; William E. Seaman, Woodside, and Chester W. Newell, San Jose, all of Calif., assignors to Newell Research Corporation, Saratoga, Calif.

Filed Jan. 12, 1977, Ser. No. 758,816
Int. Cl.[2] H04M *1/64*
U.S. Cl. 179—6 R 10 Claims



2. An automatic telephone answering recording tape apparatus which comprises:

(a) tape transport means for containing and transporting magnetic recording tape,

said transport means including first and second tape hubs and a first magnetic tape having first and second end portions wound, respectively, onto the first and second hubs and having a tape loop extending therebetween, a second magnetic recording tape formed into an endless loop and bidirectional first and second tape transport means for guiding the first tape loop along a first path which traverses a tape head region and the second tape along a second path past which also traverses the tape head region, said first and second tape transport means being configured for causing both tapes always to be transported simultaneously along the respective tape paths whenever one of the tapes is transported, and for always causing one of the tapes to traverse the tape head region in a forward record/playback direction when the other tape traverses the tape head region in a reverse record/play direction,

(b) tape record/playback means for recording messages on the tapes and playing back messages therefrom, said record/playback means including tape head means positioned at the tape head region in operative relationship with said tapes,

(c) tape drive means cooperating with said tape means for causing bilateral transporting of the tapes along the respective tape paths and across the tape head region, and

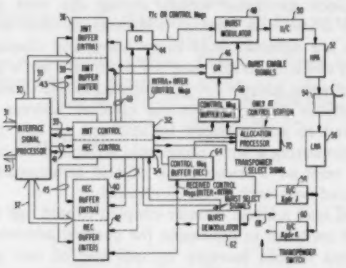
(d) control means responsive to the record/playback means for energizing the record/playback means and controlling recording and playing back thereby, and energizing the tape drive means and controlling forward and reverse directions of tape drive thereby.

4,135,059

MULTIPLE CHANNEL PER BURST TDMA MULTIPLE TRANSPONDER NETWORK

William G. Schmidt, Gaithersburg, Md., assignor to Satellite Business Systems, McLean, Va.

Filed Jul. 7, 1977, Ser. No. 813,645
Int. Cl.[2] H04J *3/06*
U.S. Cl. 179—15 BS 9 Claims



1. A demand assigned multi-transponder TDMA system including:

first and second transponders in quasi-synchronous earth orbit,

a first group of associated stations intra-communicating through said first transponder having a TDMA frame, a second group of associated stations intra-communicating through said second transponder having a TDMA frame wherein stations in said first group can inter-communicate with stations in said second group and stations in said second group can inter-communicate with stations in said first group, said system further including:

means at one station effective for establishing a frame reference for both said first and second transponder TDMA frames, to thereby synchronize said frames,

synchronized transponder hopping means at all of said stations enabling communication between stations of said first and second groups, through either said first or second transponder whereby intra group communications are carried on in a first portion of said first and second TDMA frames and inter group communications are carried on in portions of said frames exclusive of said first portion, and

control means for enabling orderly changes in burst duration and position of bursts transmitted by all said stations, said control means including means for transmitting burst position and duration change orders through said transponders to all said stations.

4,135,060

CIRCUIT ARRANGEMENT FOR A TIME DIVISION MULTIPLEX COMMUNICATION SYSTEM FOR THE CHANNEL BY CHANNEL COMBINATION AT THE RECEIVING END OF INFORMATION TRANSMITTED IN THE FORM OF MULTIFRAMES

Claus Heckel, Stuttgart; Dieter Wimmer, Schorndorf, and Frank Knabe, Leonberg, all of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 19, 1977, Ser. No. 862,243
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1976, 2657878
Int. Cl.[2] H04J *3/06, 3/12;* H04M *7/16*
U.S. Cl. 179—15 BY 7 Claims

1. A circuit arrangement for the channel by channel combination at the receiving end of signalling information, which is distributed over m frames within n channels of a digital time division multiplex communication system, transmitted in the form of multiframes, where m and n are integers greater than one, comprising:

a random access memory having a capacity sufficient to

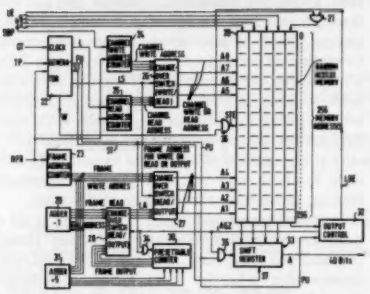
store said signalling information from at least m frames, said signalling information being written in parallel form in the order of receipt in said memory, the address of said memory being divided into a frame address and a channel address which can be stepped on independently of each other;

a clock generator which alternately determines read and write phases;

a pair of changeover switches coupled to said memory and said clock generator which, during the read phases, switch frame and channel addresses to said memory which are different from those frame and channel addresses switched to said memory during the write phases;

a channel write address counter coupled to one of said pair of switches to determine the channel address to be switched to said memory by said one of said pair of switches during a write phase, said write address counter being reset by a frame clock of said arrangement and advanced with each received channel;

a channel read address counter coupled to said one of said pair of switches to determine the channel address to be switched to said memory by said one of said pair of switches during a read phase, said read address counter



being reset by said frame clock and advanced n times during each frame period at regular time intervals;

a frame address counter coupled to the other of said pair of switches to determine the frame address to be switched to said memory by said other of said pair of switches during a writing phase, said frame address counter being advanced by said frame clock;

first means coupled to said frame address counter to reduce the frame address coupled to said memory by a fixed amount during the write phase until a multiframe end of signal is detected in a channel of a frame during a read phase;

second means coupled to said frame address counter and set to increase step by step the frame address, beginning with the frame address marking the beginning of a multiframe, up to the detected frame address marking the end of said multiframe; and

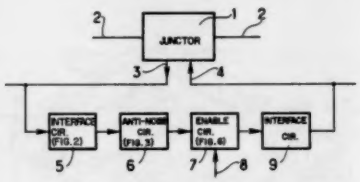
third means coupled to said memory to extract information so addressed by said frame address marking said end of said multiframe from said memory in parallel and to translate said extracted information into serial form before the channel address to be coupled to said memory is increased.

4,135,061

DEVICE FOR BLOCKING A JUNCTOR OF AN AUTOMATIC SWITCHING SYSTEM

Marcel Pincemin, Ris Orangis, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, S.A., Paris, France

Filed Apr. 21, 1977, Ser. No. 789,593
Claims priority, application France, Apr. 29, 1976, 76 12786
Int. Cl.² H04M *3/22*
U.S. Cl. 179—18 E **6 Claims**



1. A device for blocking the junctor of an automatic switching system, said junctor having a control input which, when grounded blocks said junctor, and a signalling output on which ground may or may not be present, pulsed or otherwise, corresponding to the free, engaged or blocked state of said junctor, the engaged state of the junctor being indicated by the presence of continuously applied ground on the signalling output, said device comprising:

a first interface circuit connected to the signalling output of the junctor, transforming the presence or the absence of ground at said output into logic levels;

an enabling circuit having an output and two inputs, a first input receiving the logic levels coming from the first interface circuit, and a second input receiving requests for blocking the junctor, said enabling circuit transmitting a blocking request only when the signalling output of the junctor is not grounded;

and a second interface circuit connected between the control input of the junctor and the output of the enabling circuit, said second interface circuit transforming a blocking instruction coming from the enabling circuit into a ground of the control input of the junctor.

4,135,062

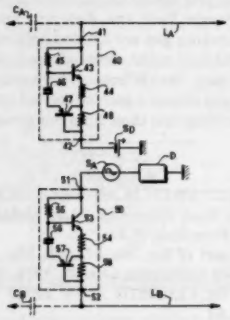
ELECTRIC NETWORK FOR USE IN A SUBSCRIBER'S LOOP

Gilbert M. M. Ferrieu, Bievres, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,157
Claims priority, application France, Dec. 10, 1976, 76 37285
Int. Cl.² H04M *1/74*
U.S. Cl. 179—84 R **5 Claims**

1. An electric network for use in a subscriber's loop, comprising at least two connecting terminals for supplying thereto a current flowing in the subscriber's loop, the network comprising a capacitive element, a switching device arranged in series with the capacitive element, and a threshold device

means coupled to the connecting terminals and the switching device for either coupling or not coupling, depending on the



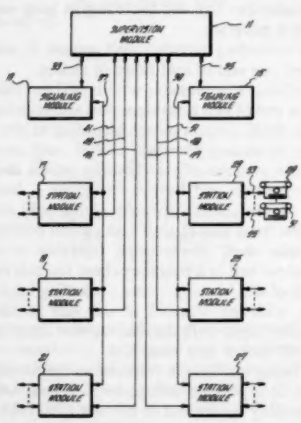
polarity and the value of said current, said capacitive element to the connecting terminals of the network.

4,135,063

MODULAR, EXPANDABLE INTERCOM SYSTEM FOR A MULTIPLE-STATION TELEPHONE SUBSCRIBER INSTALLATION

Lynn R. Bosen, Costa Mesa, Calif., assignor to San/Bar Corporation, Santa Ana, Calif.

Filed Aug. 12, 1977, Ser. No. 824,078
Int. Cl.[2] H04M *9/00*
U.S. Cl. 179—99 **7 Claims**



1. A modular intercom system for use with a key telephone system wherein the intercom lines of the system increase as more key telephones are added to the key telephone system, said intercom system comprising:

a plurality of station control means, each control means adapted to communicate with a plurality of key telephones over their intercom circuits, for initiating a service request by one of the key telephones, and maintaining an intercom connection between two key telephones in the system, each station control means having a separate interconnect link to each other station control means in the system;

a supervision means connected to each of the station control means in the system for sensing a service request initiated by a station control means and controlling the intercom connection of one key telephone to another key telephone over one of the interconnect links in the intercom system; and

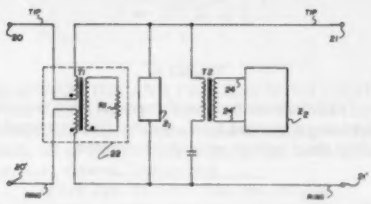
at least one signalling means connected to each of said station control means and the supervision means for routing control signals to the individual key telephone intercom circuits under control of said supervision means and the respective station control means.

4,135,064

IMPEDANCE COMPENSATION OF TRANSMISSION LINE

Nachum Lichtenstein, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 15, 1977, Ser. No. 824,659
Int. Cl.[2] H04B *3/18*
U.S. Cl. 179—170 G **9 Claims**



1. An impedance matching network for a repeatered non-loaded voice frequency transmission line comprising, in combination: a first pair of terminals for connection to a repeater; a second pair of terminals for connection to said transmission line; means for introducing two effective series resistances at predetermined frequencies one each between each of said first and second pairs of terminals without substantially affecting d-c current flow; passive impedance means coupled across said second pair of terminals; and a negative impedance converter for converting the impedance of a series connection of a resistor, a capacitor and an inductor, the converter impedance being a-c coupled across said second pair of terminals; whereby said impedance matching network matches the impedance of said transmission line to the impedance of said repeater while maintaining stability.

4,135,065

CODING SWITCH

Jean Nicot, Evreux, France, assignor to U.S. Philips Corporation, New York, N.Y.

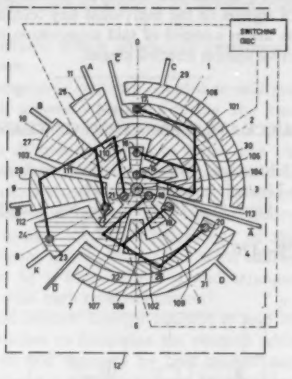
Filed Dec. 2, 1976, Ser. No. 746,876
Claims priority, application France, Dec. 22, 1975, 75 39296
Int. Cl.[2] H01H *19/54*
U.S. Cl. 200—11 DA **3 Claims**

1. A coding switch for providing binary and complementary binary outputs corresponding to a selected one of a plurality of rotary switching positions, comprising:

a contact board having a common contact track and a plurality of individual contact tracks corresponding to respective individual binary digits and their complements on one side only, located about an axis perpendicular to the board, said individual contact tracks having contact surfaces concentric with said axis at a plurality of distances from the axis, said plurality of individual tracks being at the most equal to the number of digits in the largest binary number to be coded; and

a switching disc mounted for rotation about said axis of rotation between successive switching positions, said switching positions being separated by a given angular distance; and said disc having a plurality of contact groups, each group having a row of contact points aligned radially from said axis for making electrical contact with respective contact surfaces, at least one of said contact

rows engaging contact track surfaces at a first plurality of radial distances from said axis and a second of said contact rows engaging contact track surfaces at a different plural-



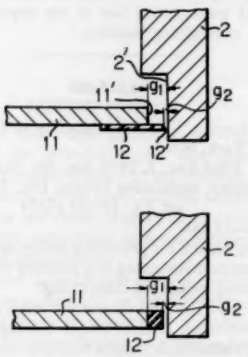
ity of radial distances from the axis; at least two adjacent rows being separated by an angular distance equal to two or four times said given angular distance.

4,135,066

DISTRIBUTOR FOR INTERNAL COMBUSTION ENGINE CONTAINING APPARATUS FOR SUPPRESSING NOISE

Teruo Yamanaka, and Osamu Hori, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation-in-part of Ser. No. 566,936, Apr. 10, 1975, Pat. No. 4,039,787. This application Dec. 22, 1976, Ser. No. 753,375
Claims priority, application Japan, Apr. 20, 1974, 49-44734
The portion of the term of this patent subsequent to Aug. 2, 1994, has been disclaimed.
Int. Cl.[2] H01H *19/00*; F02P *1/00*
U.S. Cl. 200—19 R **10 Claims**



1. A distributor for an internal combustion engine, containing an apparatus for suppressing noise, comprising:

a distributor rotor having an electrode attached thereto which is located in the distributor and rotates at the same pace as the rotation of a distributor driving shaft driven by the internal combustion engine;

a distributor cap containing a plurality of stationary terminals which are located in the distributor cap and are arranged along a circular locus defined by the rotation distributor rotor electrode with a first discharging gap maintained between the terminals and the distributor rotor electrode;

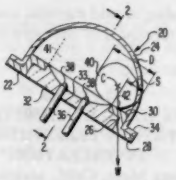
a dielectric member positionable on at least one of said terminals and said electrode to define a second discharging gap, wherein both the dielectric member and the second discharging gap are located between the terminals and the distributor rotor electrode and close to the first discharging gap, the difference between the first spark discharging gap distance and the second spark discharging gap distance being less than 3mm but greater than 0.2mm.

4,135,067

TILT SWITCH AND HOLDER

Sheldon S. Bitko, East Brunswick, N.J., assignor to Fifth Dimension, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 672,050, Mar. 30, 1976, Pat. No. 4,099,040. This application Oct. 28, 1976, Ser. No. 736,773
Int. Cl.[2] H01H *35/14, 29/00*
U.S. Cl. 200—61.52 **21 Claims**



1. A tilt switch comprising:

a gravity responsive conductive ball;

housing means defining an enclosure for said gravity responsive conductive ball and including at least one portion of insulative material;

inwardly extending annular shelf means in said enclosure adjacent one end of said housing means;

means defining a depression within said enclosure adjacent said one end of said housing means and surrounded by said annular shelf; contact means including at least one switch contact extending through said at least one portion of insulative material of said housing means and exposed at said depression and further including at least one additional switch contact located within said enclosure and insulated from said at least one switch contact:

said annular shelf means being operable to support said conductive ball in a position where the ball rests against a portion of said housing means projecting beyond said shelf means, with the centroid of said ball located within an imaginery right cylinder having the inner periphery of said shelf means as a base; and

said ball being movable in response to the orientation of said switch, to a position unsupported against said portion of said housing means and in contact with both said at least one contact exposed at said depression and said at least one additional switch contact.

4,135,068

DEAD MAN SAFETY ASSEMBLY

Albert L. Burns, Houston, Tex., assignor to Bowen Tools, Inc., Houston, Tex.

Filed Sep. 13, 1976, Ser. No. 722,742
Int. Cl.[2] H01H *9/06*; B24B *49/00*
U.S. Cl. 200—61.85 **14 Claims**

1. A dead man safety assembly, comprising:

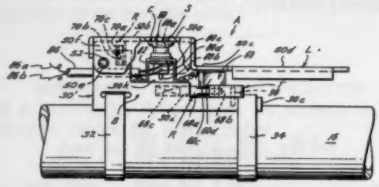
an activator body;

control means mounted with said activator body and movable from a non-operative position to an operative position;

an activator lever pivotally mounted with and externally of said activator body along the longitudinal axis thereof and

operably engagable with said control means, said control means movable from a first position wherein said control means is in said non-operative position to a second position wherein said control means is in said operative position by pivotal movement of said activator lever with respect to said activator body for operatively engaging said control means; and,

safety trigger means rotatively mounted with and externally of said activator body and coacting with said activator



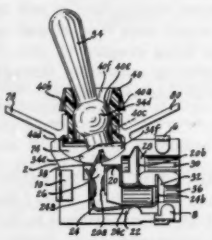
lever, and said safety trigger means being rotatable about an axis substantially perpendicular to the longitudinal axis of said activator body, said safety trigger means rotatable from a normally misaligned position relative to said activator lever wherein unintentional movement of said activator lever from said first position to said second position is prevented, to an aligned position wherein movement of said activator lever from said first position to said second position for actuating said control means is permitted.

4,135,069

COMPLETELY INSULATED TOGGLE SWITCH

Earl T. Piber, Oconomowoc, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 26, 1976, Ser. No. 745,468
Int. Cl.² H01H 5/28
U.S. Cl. 200—67 G **8 Claims**



1. A completely insulated toggle switch comprising:

a two-piece insulating housing having complementary parts including a base and a cover and snap-in coupling means for mounting the cover to the base, and a switch contact cavity and terminal cavities connected to said switch contact cavity therewithin;

stationary contact means in said switch contact cavity and having a terminal portion extending into its terminal cavity;

movable contact means in said switch contact cavity and having a terminal portion extending into its terminal cavity;

a snap-in bushing clamped between said housing parts and having external snap-in means for mounting the switch in a hole in a mounting panel;

a toggle lever mounted in said snap-in bushing and having means supporting a pivotal toggle link at its internal end within said switch contact cavity;

means coupling said toggle link to said movable contact means pivotally with interference requiring depression of said movable contact means to enable over-center movement of said toggle link; said movable contact means comprising spring bias whereby said toggle link slides said movable contact means and snaps it into open position with respect to said stationary contact means when said toggle lever is actuated to off position, and said bias causing snap-action of said toggle link to effect closure of said movable contact means with respect to said stationary contact means when said toggle lever is actuated to on position;

insulation cutting means on said terminal portions;

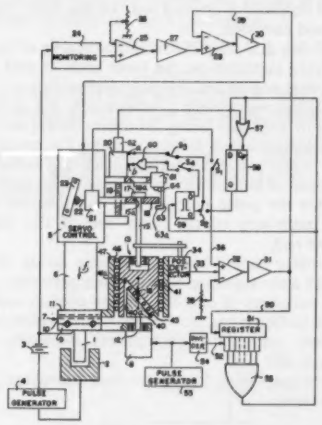
and means in said cover overlying said terminal cavities allowing insertion of unstripped insulated conductors over said terminal portions and depression thereof by pressure applied externally of the housing to make electrical connections.

4,135,070

EDM APPARATUS AND PROCESS WITH CONTROL FOR VARIABLE ECCENTRIC OVERCUTTING

Jean Pfau; Alain Wavre, both of Geneva, and Rudolf Schneider, Reinach, all of Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed Apr. 15, 1977, Ser. No. 787,850
Claims priority, application Switzerland, May 5, 1976, 5614/76
Int. Cl.² B23P 1/08
U.S. Cl. 219—69 M **27 Claims**

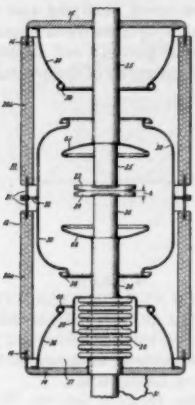


1. In an EDM process for machining an electrode workpiece by means of an electrode tool whereby the electrodes are displaced one relative to the other along a longitudinal feed axis of relative advance while simultaneously relatively orbiting the electrodes in a plane perpendicular to the feed axis such as to accomplish a three-dimensional relative motion between the electrodes and wherein the amplitude of said displacement is controlled such as to maintain predetermined machining conditions within the machining zone between the electrodes, the improvement comprising accomplishing the machining of a surface on the workpiece in a plurality of consecutive machining passes during each of which the path of the orbiting motion is on an envelope surface of predetermined shape until a predetermined limit of orbiting path is reached, axially displacing said surface when said limit is reached, and causing the machined surface to be different from the envelope surface of all the limits of the orbiting paths.

4,135,071
VACUUM CIRCUIT INTERRUPTER WITH DISC-SHAPED BERYLLIUM CONTACTS

Donald W. Crouch, Newtown Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Mar. 17, 1976, Ser. No. 667,742
Int. Cl.[2] H10H *1/06*
U.S. Cl. 200—275 **12 Claims**



1. A vacuum-type circuit interrupter rated to interrupt alternating currents of 35,000 amperes r.m.s. or higher with any degree of asymmetry up to 1.3, comprising:

a. a highly evacuated envelope,

b. a pair of conductive contact rods having their inner ends within said envelope,

c. a pair of thin disc-shaped contacts primarily of beryllium respectively mounted on the inner ends of said contact rods, at least one of said contacts comprising:

c(1) a central region with a substantially flat surface primarily of beryllium facing the other contact and located in a predetermined reference plane for engaging the other contact, said flat surface extending radially from the center of said contact to a perimeter located radially between the outer periphery of said contact and the outer periphery of the inner end of the associated contact rod,

c(2) an outer region having a surface facing the other contact and extending between said perimeter and the outer periphery of said disc-shaped contact, said outer-region surface being located behind said reference plane so that no contact-engagement normally occurs thereon, and

d. said interrupter being free of structure interposed between said contacts.

4,135,072
CIRCUIT BREAKER HAVING OPENING SPRING POSITION INDICATOR

Alfred E. Maier, Chippewa, and Louis N. Ricci, Chippewa Township, Beaver County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 23, 1977, Ser. No. 827,038
Int. Cl.[2] H01H *9/00*
U.S. Cl. 200—308 **5 Claims**

1. A circuit breaker comprising:

a stationary contact;

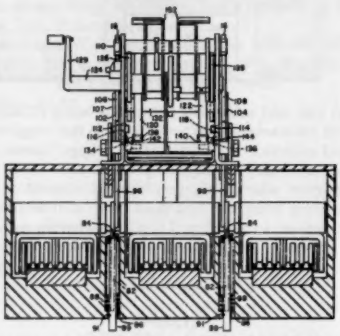
a movable contact operable between open and closed positions with respect to said stationary contact;

movement effecting means for effecting movement of said movable contact between said open and closed positions, said movement effecting means including an opening spring capable of being in a first position whenever said movable contact is in said open position and being in a second position whenever said movable contact is in said closed position;

an indicator rod coupled to said opening spring and indicating the position of said opening spring;

a support having a plurality of walls extending outwardly therefrom, each of said walls having an opening therein extending through said support;

a plurality of stationary contacts secured to said support, one of said support walls being disposed intermediate adjacent stationary contacts;



a plurality of movable contacts operable between open and closed positions with respect to said stationary contacts; and said movement effecting means includes

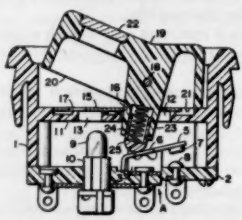
a plurality of opening springs, one of said opening springs being disposed within each support wall opening;

said indicator rod being coupled to one of said opening springs and extending outwardly through said support wall opening to beyond said support.

4,135,073
DEVICE FOR INDICATING SWITCH OPERATION BY VARIABLE ILLUMINATING LIGHT

Mitsuo Kobayashi, Gifu, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Mar. 15, 1978, Ser. No. 887,203
Claims priority, application Japan, Mar. 15, 1977, 52/31378[U]
Int. Cl.[2] H01H *9/00*
U.S. Cl. 200—315 **10 Claims**



1. A device for indicating a switch operation by a variable illuminating light comprising:

a switch case;

a means for controlling operation of the switch provided on the case;

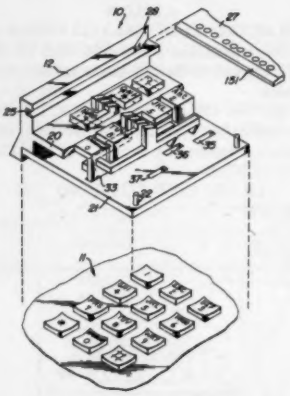
a light transmitting window provided in the controlling means;
an illuminating lamp provided in the switch case for illuminating through said light transmitting window;
a movable plate interposed between the light transmitting window and the illuminating lamp and actuated in response to the controlling means; and
a light control aperture provided in the movable plate for changing the character of the illuminated light through the light transmitting window in accordance with the actuation of the movable plate.

4,135,074

AUTOMATIC KEYBOARD OPERATOR

Joseph J. Malacheski, Wilkes-Barre, Pa., assignor to Donald Gutkowski, Ashley, Pa., a part interest

Filed Jul. 26, 1977, Ser. No. 819,065
Int. Cl.[2] H01H *3/20*
U.S. Cl. 200—330 **8 Claims**



1. An automatic operator for a keyboard including plural lateral ranks and longitudinal files of keys, said operator comprising a plurality of carriers located over each file for up-and-down movement, a depressor depending from each carrier toward a corresponding key for depressing engagement with the respective key upon downward carrier movement, an upstanding tab on each carrier and offset laterally from each other, lower guide means between said keys and carriers in guiding relation with said depressors, actuating means movable longitudinally of said files over said carriers for actuating engagement with preselected tabs for effecting said depressing engagement, and upper guide means between said carriers and actuating means in guiding relation with said tabs, said carriers each comprising an elongate member extending longitudinally of a respective file in side-by-side relation with the remaining carriers of the associated file, said depressors depending from respective elongate members, said tabs upstanding from respective elongate members, and a manual key on each elongate member upstanding over a respective keyboard key for manual actuation.

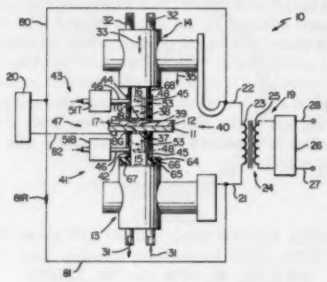
4,135,075

RESISTANCE WELDING APPARATUS AND METHOD

Robert L. Heflin, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed Sep. 12, 1977, Ser. No. 832,589
Int. Cl.[2] B23K *11/10*
U.S. Cl. 219—78.14 **20 Claims**

4. In a resistance spot welding machine having; two opposed welding electrodes; means for relatively moving said electrodes in close proximity to and against a pair of superimposed electrically-conducting members to be welded; an electrical welding circuit connected to said electrodes for inducing an electric current across said electrodes with each electrode disposed against a portion of an outer exposed area of an associated one of said members so as to fuse the faying surfaces of said members at areas intermediate said portions; and means for cleaning each of said portions and electrode associated therewith including first means providing inert gas in a first zone between one of said portions and its electrode and second means providing inert gas in a second zone between the other



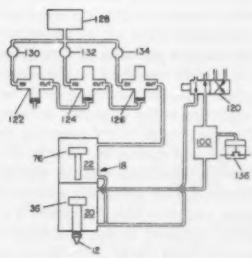
of said portions and its electrode, and an electrical cleaning circuit operatively connected to said providing means; the improvement which comprises, apparatus comprising a part of said cleaning means for sequentially cleaning said electrodes and said portions by alternating controlled bathing flow of inert gas to said first zone and then to said second zone with said electrical cleaning circuit activated causing cleaning action in each zone to be self starting and ending as a function of the presence of sufficient inert gas therein.

4,135,076

APPARATUS FOR RESISTANCE WELDING

Donald J. Beneteau, 1333 Front Rd. South, Amherstburg, Canada

Filed Apr. 11, 1977, Ser. No. 786,379
Int. Cl.[2] B23K *9/28;* F15B *15/18*
U.S. Cl. 219—89 **6 Claims**



1. Apparatus for resistance welding a first body to a second body, said apparatus comprising means forming a first chamber, a first piston in said chamber, a first piston rod connected to said first piston and extending out of said chamber, an electrode affixed to an end of said piston rod, means forming a second chamber, a second piston in said second chamber, a second piston rod connected to said second piston and extendable into said first chamber, a source of gas under pressure, a first regulator for regulating the gas at one pressure, a second regulator for regulating the gas at a second pressure different from the first pressure, a first three-way valve having an in port, an out port, and an exhaust port, with the out port com-

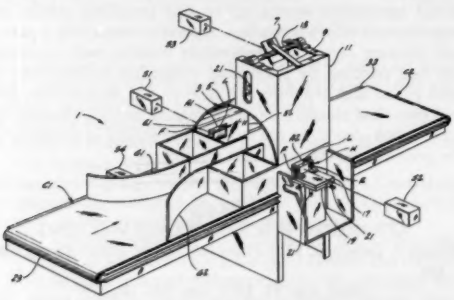
municating with the exhaust port when the first valve is not actuated and the out port communicating with the in port when the first valve is actuated, a second three-way valve having an in port, an out port, and an exhaust port, with the out port communicating with the exhaust port when said second valve is not actuated and the out port communicating with the in port when said second valve is actuated, first passage means connecting the out port of said first valve with said second chamber on the side of said second piston opposite said second piston rod, second passage means connecting the exhaust port of said first valve with the out port of said second valve, third passage means connecting the in port of said first valve with said first regulator, and fourth passage means connecting the in port of said second valve with said second regulator, said first regulator supplying gas under the one pressure to said second chamber when said first valve is actuated, said second regulator supplying gas under the second pressure to said second chamber when said second valve is actuated and said first valve is not actuated.

4,135,077

LASER BREAD BROWNING APPARATUS

Kendall S. Wills, 10903 Vanderford, Houston, Tex. 77072

Filed Sep. 16, 1976, Ser. No. 724,027
Int. Cl.[2] A47J *37/00*
U.S. Cl. 219—121 L **2 Claims**



1. Apparatus for browning the outer surface of a bakery product such as a loaf of bread comprising:

means defining a browning chamber through which the bakery product is conveyed, said means having a plurality of apertures therein;

means for generating a plurality of laser beams of a wavelength that is readily absorbed by the outer surface of the bakery product and for directing each beam through a respective aperture in the chamber defining means;

means for diverging each beam entering the chamber to scatter the beam and spread the energy contained therein out over a wider area than that in which the energy is initially contained, said diverging means including a plurality of lenses, one of which is positioned at each aperture in the chamber defining means and each of which has a substantially flat back surface upon which a laser beam impinges and a generally concave-shaped front surface which diverges a beam transmitted through the lens, so that each laser beam is diverged only as it enters the browning chamber; and

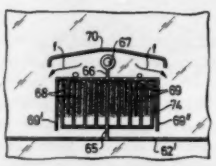
means for directing the divergent beams into a predetermined zone within the chamber through which the bakery product must pass whereby the laser radiation within the zone strikes the outer surface of the bakery product and is absorbed thereby to brown said outer surface; wherein the chamber defining means includes means forming a tunnel open at both ends, one end being the entrance to the browning chamber and the other end the exit therefrom said tunnel being lined with stainless steel to reflect laser radiation toward the predetermined zone; wherein the chamber defining means further includes a first means for conveying the bakery product into the browning chamber and a second means to which the bakery product is transferred for conveying it away therefrom, said first and second conveyor means being so positioned with respect to each other that a gap exists therebetween and wherein the beam directing means includes means for directing at least one of the laser beams upwardly from below said gap, through said gap, and into said predetermined zone, whereby the bottom surface of the bakery product is exposed to laser radiation within the zone and browned thereby as the object is transferred across the gap between the conveyor means.

4,135,078

ELECTRICALLY HEATED WINDOW

Siegfried Kuiff, and Heinz Ueberwolf, both of Herzogenrath, Germany, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 459,103, Apr. 8, 1974, Pat. No. 3,995,140.
This application Jun. 25, 1976, Ser. No. 699,879
Claims priority, application France, Apr. 12, 1973, 73 13288; Mar. 8, 1974, 74 07909
Int. Cl.[2] H05B *3/26*; H06B *7/12*
U.S. Cl. 219—203 **4 Claims**



1. A thermal window comprising a smooth surfaced transparent sheet which is inclined from the horizontal when installed for use, a plurality of spaced electric resistance heating conductors on the sheet extending generally horizontally, terminal means for connecting said heating conductors in circuit with a source of electrical power, and a humidity detector including at least two conductors closely spaced from each other affixed to and standing in relief from the inside surface of the sheet, said conductors of the humidity detector extending substantially perpendicular to said heating conductors so as to extend in a direction of maximum slope of said sheet when installed for use with one of the conductors extending below the lower terminus of the other of the conductors and closely approaching one of said heating conductors.

4,135,079

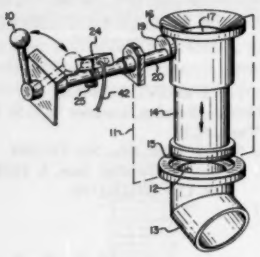
TANK HEATER ALARM

Veral L. McGraw, 3825 SE. 133rd Ave., Portland, Oreg. 97236

Filed Jul. 18, 1977, Ser. No. 816,528
Int. Cl.[2] F24H *1/20*; H05B *1/02*
U.S. Cl. 219—327 **4 Claims**

1. In an appliance having a tank, an electrically controlled heating unit to heat liquid in said tank, and a tank drain valve,

the improvement comprising an alarm circuit energized from a circuit which is energized to operate said heating unit, and a



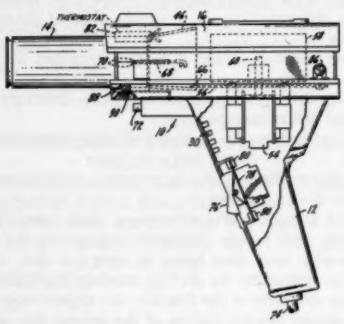
control switch for actuating an alarm in said alarm circuit which is closed by the opening of said drain valve.

4,135,080

PORTABLE ELECTRIC HEAT GUN

Peter M. Wells, Jr., Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Sep. 27, 1976, Ser. No. 726,989
Int. Cl.[2] H05B *3/02;* F24H *3/04;* A45D *20/10*
U.S. Cl. 219—370 **14 Claims**



5. In an electric heat gun assembly, a housing with a handle depending from the lower surface thereof and an electric air heating nozzle projecting from the front thereof, the fan and fan motor in the housing for directing an air stream out through the nozzle, the housing being divided into three main parts, two of the parts being vertically disposed side-by-side halves fastened together, and the third part being a top cover that fits down on and is connected to the side-by-side housing halves, an opening in the top cover of the housing for admitting air to the fan, and a circuit in the housing for controlling operation of the fan and electric air heating nozzle, with the fan and fan motor mounted on a generally horizontally disposed plate trapped between and held by the top cover and the two housing halves.

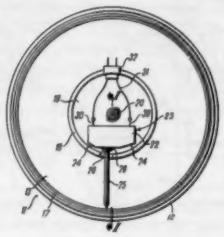
4,135,081

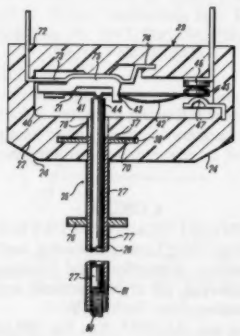
ELECTRIC COOKING PLATE WITH A TEMPERATURE LIMITER

Karl Fischer, Am Gaensberg, 7519 Oberderdingen, Fed. Rep. of Germany

Filed Jul. 14, 1976, Ser. No. 705,364
Int. Cl.[2] H05B *3/68*
U.S. Cl. 219—449 **22 Claims**

1. An electric cooking plate, comprising:
a heat conductive support plate;
means for electrically heating said support plate disposed thereon so as to form a heating element region and an unheated central zone;
electrical circuit means for said heating means;
a temperature limiter having first means for switching said heating means on and off in response to small temperature differences, said limiter being effective in a region of a limiting temperature; and,
an adjustable energy controller for regulating power supply





to the heating means through the temperature limiter, having second means for switching the power on and off with a relative switch-on duration varying in dependence on an adjusted setting and upon the temperature limiter becoming effective, the period of time between successive switch-offs of the temperature limiter being of the same order of magnitude as the relative switch-on duration of the energy controller, said first and second switch means being independently operable.

4,135,082

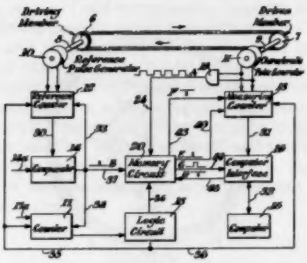
ELECTRICAL PULSE TRAIN COMPARATOR

Raymond S. Borders, Jr., Claymont, and Michael H. Shearon, Newark, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 13, 1977, Ser. No. 832,975
Int. Cl.[2] H03K *21/08*
U.S. Cl. 235—92 CC **1 Claim**

1. In an electrical pulse train comparison apparatus including a measuring pulse encoder and a reference pulse source, a measuring pulse counter and a reference pulse counter, each summing respectively the number of pulses received from said measuring pulse encoder and said reference pulse source, a presettable count range comparator receiving the pulse count from said reference counter, said comparator generating a signal when the count received in said comparator equals the preset range of said comparator, and means for resetting said comparator and said reference and measuring counters, the improvement comprising:
a computer having a computer interface; and
a memory circuit means connected between said measuring pulse counter and said computer interface and responsive

to said comparator signal, for delaying the transfer of the total count stored in said measuring pulse counter to said computer interface and the resetting of said pulse measuring counter until after a sequential detection of the trailing edge of the next-following measured pulse from said measuring pulse encoder occurring after receipt of said comparator signal by said memory circuit means.



4,135,083

OPTICAL SCANNING DEVICE

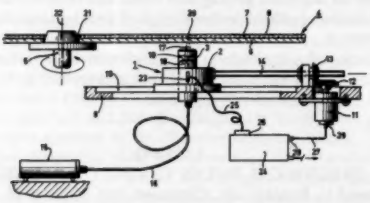
Antonius A. M. Van Alem; Lieuwe Boonstra, both of Eindhoven; Francois D. Dekker, Amsterdam, and Johannes T. A. Van de Veerdonk, Eindhoven, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 14, 1977, Ser. No. 787,610

Claims priority, application Netherlands, May 12, 1976, 7605043

Int. Cl.[2] G01J *1/20*

U.S. Cl. 250—201 **14 Claims**



1. A scanning device for reading information recorded in tracks on an optically encoded recording medium, comprising:

a frame;

a radiation source means for providing a radiation beam in a given direction;

an objective lens system means having an optical axis in the path of said radiation beam and oriented along said given direction for focussing said radiation beam on said recording medium;

a focussing bearing means connected to said frame and to said objective lens system means for permitting focussing movements along said given direction;

electrically controllable focussing means for driving said objective lens system in said given direction to focus said beam on said recording medium;

tracking bearing means connected to said objective lens system means and to said frame for permitting the given direction of said radiation beam and the orientation of said optical axis to change, thus permitting tracking movements of the objective lens system in a direction perpendicular to the tracks on the record carrier; and

electrically controllable tracking means for effecting the tracking movements of the objective system means.

4,135,084

TAPE DRIVE SENSOR

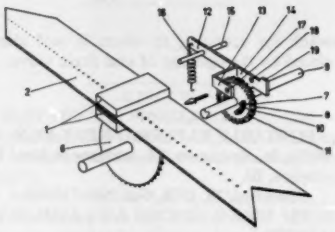
Carl-Otto Ulin, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 1, 1976, Ser. No. 737,599

Claims priority, application Sweden, Nov. 5, 1975, 7512361

Int. Cl.[2] G01D *5/34*

U.S. Cl. 250—231 R **2 Claims**



1. A device for sensing torque in a tape drive apparatus and indicating absence of tape at a sensing zone of the apparatus, comprising

a driven member mounted to the apparatus for rotation about an axis,

means for driving a tape in the apparatus, drivingly coupled to said driven member,

a driving member for applying driving torque about said axis,

torsionally resilient means for coupling the driving member to the driven member,

first and second apertured opaque discs coupled to said driving and driven members respectively for rotation therewith, said discs being so arranged that, when the torque exerted by the driving member is within a normal range, apertures in the first disc are aligned opposite corresponding opaque regions of the second disc; and when the torque exerted by the driving member is greater than said normal range, apertures in the first and second discs are at least partially aligned opposite each other, and

indicating means comprising a bifurcated part having first and second arms; a radiation emitting element mounted to the first arm; a radiation receiving element mounted to the second arm; means for mounting said part for movement between a first position in which the apertured portions of the first and second discs pass between the radiation emitting and radiation receiving elements, and a second position in which radiation from the emitting element can pass by the discs; means for biasing said part toward the second position; and means responsive to presence of tape at the sensing zone of the apparatus for holding said bifurcated part in the first position.

4,135,085

CHARGING DEVICE FOR BASECOAT CHARGING OF CAN ENDS

Robert D. Payne, Countryside, and Boris J. Kirsanoff, Darien, both of Ill., assignors to The Continental Group, Inc., New York, N.Y.

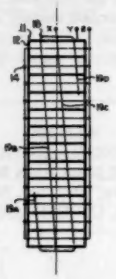
Filed Aug. 10, 1977, Ser. No. 823,452

Int. Cl.[2] H01T *19/04*

U.S. Cl. 250—325 **8 Claims**

1. An apparatus for providing a uniform charge upon a surface of a conductive base, said apparatus comprising a

longitudinally elongated corona discharge element, a potential source connected to said discharge element for applying a corona-generating potential to said discharge element, conveyor means for conveying at least one conductive base along a path in a direction along the length of said discharge element wherein the base is charged, a protective grid assembly disposed directly adjacent said discharge element, said grid assembly including protective elements having sufficient resis-



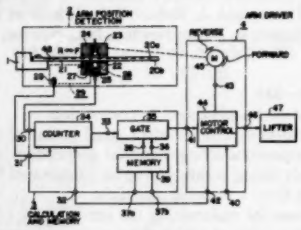
tance to prevent the conveyed base from contacting said discharge element and of a size to cast a persistent electrical shadow upon the conveyed base, said protective elements extending primarily longitudinally of said discharge element and relative to the direction of the conveyed base while being skewed transversely whereby the electrical shadow cast by said protection elements is equally distributed over the conveyed base.

4,135,086

AUTOMATIC RECORD PLAYER OF LINEAR TRACKING PICKUP ARM TYPE

Mitsuru Baba, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 29, 1977, Ser. No. 782,511
Claims priority, application Japan, Apr. 1, 1976, 51/36383
Int. Cl.[2] H01J *3/14*
U.S. Cl. 250—237 G **3 Claims**



1. A system for selectively positioning a linear tracking pickup arm of a recording apparatus, comprising:

a reversible motor joined to said pickup arm and adapted to move the arm linearly when said motor is energized;

arm position-detecting means operatively related to the pickup arm for producing pulse signals in response to movement of said arm;

a reversible counter connected to said detection means for counting said pulses in an additive sense when said pickup arm is moved in one direction and in a subtractive sense when the pickup arm is moved in an opposite direction;

memory means for storing first and second count values representative of selected position locations of said pickup arm;

means operatively associated with the counter and the memory means for comparing the count of said counter with the count values of said memory means;

motor control means joined to said comparing means, to said motor, and to a pickup arm lifter;

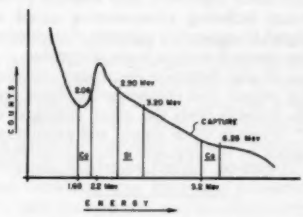
means for applying an input signal to said motor control means for commencing rotation of said motor and movement of the pickup arm, said motor control means: (1) being responsive to a coincidence between the count in said counter and the first count value in said memory means for actuating the pickup arm lifter to lower the pickup arm; and (2) being responsive to a coincidence between the count in said counter and the second count value in said memory means (a) for actuating the pickup arm lifter to raise the pickup arm and (b) for reversing the rotation of the motor and the direction of movement of the pickup arm.

4,135,087

METHOD AND APPARATUS FOR NEUTRON INDUCED GAMMA RAY LOGGING FOR LITHOLOGY IDENTIFICATION

Donald W. Oliver, and Richard B. Culver, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Aug. 31, 1977, Ser. No. 829,397
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—270 **10 Claims**



1. A method of well logging, comprising the steps of:

irradiating the formations surrounding an earth borehole with high energy neutrons;

detecting radiations emanating from said formations being irradiated by said neutrons;

generating first electrical signals based upon said detected radiation relating to the calcium content of said formations;

generating second electrical signals based upon said detected radiation relating to the calcium content of said formations;

generating third electrical signals based upon said detected radiation relating to the silicon content of said formations;

generating fourth electrical signals functionally related to the sum of said first and second electrical signals; and

generating fifth electrical signals functionally related to the ratio of said third and fourth electrical signals.

4,135,088

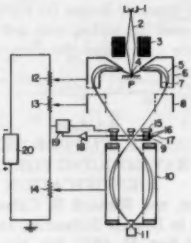
CHARGED-PARTICLE ANALYZER

Isao Ishikawa, Hino; Michiyasu Itoh, Iruma, and Katsuhisa Usami, Tokyo, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Jun. 28, 1977, Ser. No. 810,970
Claims priority, application Japan, Jun. 28, 1976, 51-75559
Int. Cl.[2] H01J *39/00;* **G01M** *23/00*
U.S. Cl. 250—307 **6 Claims**

1. In a charged-particle analyzer having means for irradiating a sample with a primary bean, deflecting electrode means for focusing charged particles emitted from the sample onto a predetermined area in relation to the center axis of the primary beam., means forming a slit disposed at the focus point of the charged particles, energy analyzing means having an object point lying at the focus point, and detector means for detecting the charged particles analyzed by the energy analyzing means,

the improvement comprising charged-particle beam correction means disposed axially symmetrically in the vicinity of a path of the charged particles between the sample and said slit means for correcting a deformation in the focusing of the charged particles, wherein said charged-particle beam correction means includes a plurality of detection electrodes for detecting the charged-particle beam and a plurality of correction electrodes, said detection electrodes and said correction electrodes being insulated from one another and said plurality of detection and correction electrodes being axially symmetrically disposed, respective detection electrodes detecting the



charged-particle beam impinging thereon and providing an output in accordance therewith, said charged-particle beam correction means including compensating signal means for supplying a signal to respective correction electrodes so as to ensure that the charged particle beam is circular,

wherein one of said detection electrodes provides a reference value output, said compensating signal means comparing the outputs from the other detection electrodes with said reference value output and providing compensating signals to the respective correction electrodes in accordance with the result of the comparison.

4,135,089

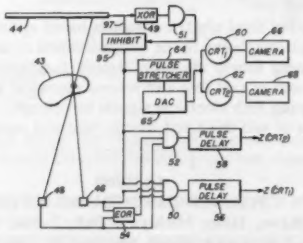
METHOD OF AND APPARATUS FOR PRODUCING IMAGES FOR STEREOSCOPIC VIEWING OF ANNIHILATION RADIATION SOURCES

John A. McIntyre, 2316 Bristol St., Bryan, Tex. 77801

Continuation-in-part of Ser. No. 548,164, Feb. 7, 1975, abandoned. This application Oct. 21, 1976, Ser. No. 734,625

Int. Cl.[2] G03B *35/00*; G01T *1/20*

U.S. Cl. 250—313 **12 Claims**



5. A method of producing images of an annihilation radiation source for stereoscopic viewing, comprising the steps of:

positioning a first position-sensitive detector in a region of said source;

positioning a second detector such that the source is substantially between said first and second detectors, said second detector having the ability to detect radiation passing through a generally small area; and

positioning a third detector such that the source is substantially between said first and third detector, said third detector having the ability to detect radiation impinging on a generally small area, said third detector located a preselected distance from the area of detection of said second detector.

generating a first signal upon the occurrence of coincidence of impinging radiation on said first and second detectors;

generating a second signal upon the occurrence of coincidence of impinging radiation on said first and third detectors;

generating a third signal corresponding to the position of the impinging radiation on said first detector responsive to either said first or second signals; and

blocking the generation of said third signal when said first signal and said second signal are generated simultaneously.

4,135,090

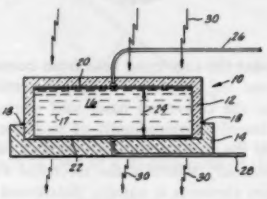
LIQUID IONIZING RADIATION DETECTOR

Alexis N. deGaston, 2190 Santa Anita Rd., Narco, Calif. 91760

Filed May 16, 1977, Ser. No. 797,511

Int. Cl.[2] G01T *1/00*

U.S. Cl. 250—336 **14 Claims**



1. A detector for measuring the irradiation of a substance by ionization of molecules in a liquid comprising:

at least one member forming a chamber;

a relatively nonconductive ionizable liquid located within said chamber, said liquid being substantially equivalent to the material being irradiated; and

at least one pair of spaced electrodes in electrical communication with said liquid.

4,135,091

DIAGNOSTIC X-RAY IMAGING SYSTEM

Richard C. Lanza, and A. Robert Sohval, both of Cambridge, Mass., assignors to Butler-Newton, Inc., Newton, Mass.

Filed Jun. 20, 1977, Ser. No. 808,515

Int. Cl.[2] G01T *1/00*

U.S. Cl. 250—336 **12 Claims**

1. A radiation imaging system comprising

A. a colloid body composed of small grains of a relatively dense superconducting material suspended in a binder, said body being positioned to be illuminated by photons incident from a selected direction,

B. a cryostat for maintaining the temperature of the grains below the value at which they can become superconducting,

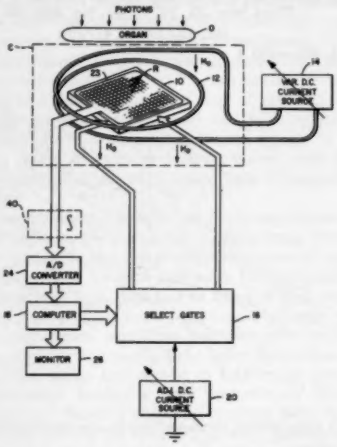
C. means for applying a magnetic field to the body whose strength is above the critical value that maintains the grains in a metastable superconducting state in the absence of said radiation, each said grain assuming its normal conducting state upon interaction with an incident photon,

D. at least two sets of select wire pairs in the body, the wires in the one set intersecting the wires in the other set so that unique pairs of wire pairs, one from each set, define the coordinates of resolution elements in the body,

E. means for interrogating a selected resolution element by applying coincident currents to the wire pairs defining the selected resolution element, the direction and magnitude of said currents creating a net magnetic field in the selected resolution element that is less than said critical

value so that normal conducting grains in the selected resolution element revert to their superconducting state and produce a flux change in the selected resolution element whose magnitude is proportional to the number of photons incident upon the selected resolution element, and

F. means for detecting the flux change.

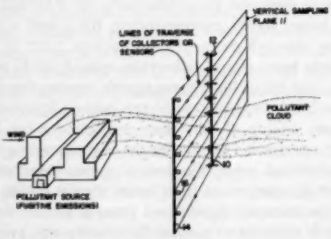


4,135,092

METHOD OF QUANTIFYING FUGITIVE EMISSION RATES FROM POLLUTION SOURCES

George H. Milly, Potomac, Md., assignor to Geomet Exploration, Inc., Boulder, Colo.

Filed Apr. 12, 1978, Ser. No. 895,427
Int. Cl.[2] G01J *1/00*; G01N *31/00*
U.S. Cl. 250—343 16 Claims


VERTICAL SAMPLING PLANE II
LINES OF TRAVERSE OF COLLECTORS OR SENSORS
POLLUTANT CLOUD
POLLUTANT SOURCE (FUGITIVE EMISSIONS)

1. Method of quantifying fugitive emission rates from pollution sources comprising:

A. Gauging wind velocity and direction at an index point downwind of a pollution source;

B. Outlining at said index point a pollution detection plane, said plane being oriented transversely with respect to the wind;

C. Sensing pollutant concentration at a series of height intervals within the vertical and lateral confines of said pollution detection plane, so as to obtain integrated products of crosswind concentration and wind speed; and

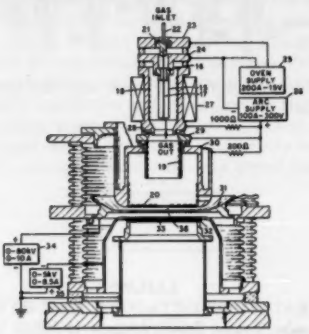
D. Displaying said products as a vertical profile of total mass flux of pollutant through said detection plane.

4,135,093

USE OF PREDISSOCIATION TO ENHANCE THE ATOMIC HYDROGEN ION FRACTION IN ION SOURCES

Jinchoon Kim, Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 24, 1978, Ser. No. 871,880
Int. Cl.[2] H01J *27/00*
U.S. Cl. 250—423 R 6 Claims



1. In a method of operating a duopigatron ion source comprising the steps of producing a glow discharge from a feed gas within the intermediate electrode thereof by an oxide-coated wire filament cathode to thereby produce a weak plasma, producing a PIG-type arc discharge between a cylindrical anode and a target cathode from said weak plasma exiting from said intermediate electrode thereby enhancing the plasma density, and extracting ions from said enhanced plasma by means of a multiple-aperture acceleration-deceleration electrode structure, the improvement comprising the steps of replacing said oxide-coated wire filament cathode with a cylindrical tungsten oven cathode, heating said oven cathode with a source of electrical supply to a desired temperature, passing said feed gas through said heated oven cathode where it is substantially pre dissociated within said oven cathode before passing therefrom, said heated oven cathode also supplying thermionic electrons for sustaining said PIG-type arc discharge, and placing tungsten liners on the inside walls of said intermediate electrode, of said anode, and of said target cathode, said liner of said intermediate electrode being heated by thermal radiation from said heated oven cathode, said liners of said anode and target cathode being heated by said arc discharge, thereby effecting a substantial increase in the atomic ion fraction and a corresponding decrease in the molecular ion fractions in the output beam from said ion source.

4,135,094

METHOD AND APPARATUS FOR REJUVENATING ION SOURCES

Charles W. Hull, Sierra Madre, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 27, 1977, Ser. No. 819,388
Int. Cl.[2] H01J *27/00*
U.S. Cl. 250—427 10 Claims

1. A method of rejuvenating an ion source having cathode and anode electrodes and a sample inlet comprising the steps of:

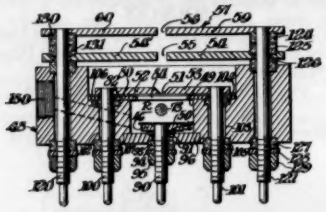
introducing an ionizing gas through said inlet to obtain a suitable sputtering pressure in said source;

forming said anode electrode of a sputtering metal, said sputtering metal being gold metal;

ionizing said ionizing gas to form ions; and

applying a negative electrical potential to said anode elec-

trode such that it is more negative than the remainder of said source, thereby to bombard said anode electrode with



said ions to sputter said metal onto the interior of said source.

4,135,095

APPARATUS FOR OBTAINING AN X-RAY IMAGE

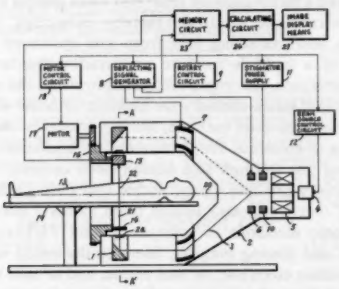
Eiji Watanabe, Tokyo, Japan, assignor to Nihon Denshi Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1977, Ser. No. 770,659

Claims priority, application Japan, Feb. 28, 1976, 51-21712; Mar. 5, 1976, 51-23995; Mar. 11, 1976, 51-26376

Int. Cl.[2] A61B 6/02

U.S. Cl. 250—445 T **10 Claims**



1. An apparatus for obtaining a two dimensional image of an X-ray absorption distribution on a cross-sectional plane of an object comprising:

a. a source for generating an electron beam,

b. a target, in part annular, for generating a fan-shaped X-ray beam, the angle of the fan being sufficient to cover the entire region of interest in said object, said target being fixed with respect to said object,

c. means for focusing said electron beam on said target,

d. means for rotating said electron beam around the target so as to irradiate said target intermittently in a predetermined fashion,

e. means for detecting and measuring the intensity of portions of each X-ray beam passed through the object comprising a plurality of detecting elements,

f. means for memorizing the output of said detecting means along with the corresponding output signals from the rotating means,

g. means for calculating the absorption value at each micro matrix area on said cross-sectional plane from the data memorized in the memory (f), and

h. means for displaying said respective calculated absorption values.

4,135,096

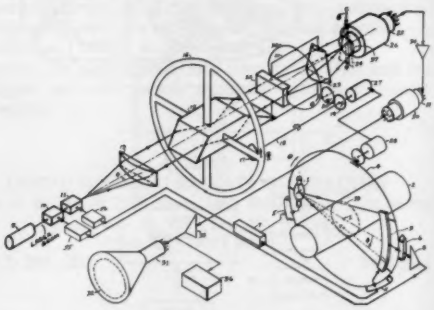
ELECTRONIC-OPTICAL SYSTEM FOR X-RAY OBJECT CROSS SECTION IMAGE RECONSTRUCTION

Ames F. Giordano, 8 Crest View, West Orange, N.J. 07052

Filed Nov. 23, 1977, Ser. No. 854,265

Int. Cl.[2] G03B 41/16

U.S. Cl. 250—445 T **36 Claims**



1. An x-ray object cross-section image reconstruction system comprising:

an x-ray apparatus projecting x-rays in a diverging fan, from a point source, through an object cross-section layer for a multiplicity of rotational angles of said point source with respect to a point in said cross-section; x-ray detection means disposed in the plane of said cross-section measuring the object cross-section path attenuations of x-ray beams fanning out at angular spacings within said fan, for each said fan rotational angle, said measurements being x-ray beam path attenuation signals, the total said rotation angle preferably being 180 degrees;

mean generating from a first fixed point, a light beam signal analog of said fan pattern of path attenuation x-ray beam signals, said light beam signals being in a first plane and having intensities determined by and analogous to said detected attenuated x-ray beam signals, said light beams generated in said fan patterns having angular spacing and beam widths analogous to and corresponding to said detected fan pattern of x-ray beams, said fan pattern of light beam signals being projected toward an image plane which is disposed perpendicularly to a central said fan light beam signal corresponding to a said x-ray beam passing through the said cross-section point of rotation, said light beam signal defines the optical axis to said image plane, said fan of light beam signals passing through a line perpendicular to said optical axis being a light beam signal intensity analog of the linear projection x-ray fan beam object attenuation profile for the corresponding said x-ray fan rotational angle, the present means generating a like second fan pattern of light beam signals having inverted polarity intensity signals and from a second fixed point which is adjacent to the said first fixed point, projecting in a plane parallel to said first fan pattern plane from said first fixed point and towards said image plane, being an image correcting fan pattern of light beam signals;

means collimating said light beam signals in said fan patterns, disposed at said perpendicular line, intercepting and directing said first and second fan patterns of light beam signals as parallel light beam signals in their respective said adjacent planes parallel to said optical axis and towards said image plane;

means intercepting and displacing said first and second planes of parallel light beam signals effectively rotating said planes about said optical axis to angles equal to said x-ray fan pattern rotational angles, said first plane being rotated about said optical axis, said adjacent inverted polarity light beam signals in said second plane being

rotated about said optical axis with said adjacent relationship being constant;

means intercepting and diverging said displaced parallel light beam signals forming uniformly diverging light ray signals in parallel planes, said means having means intercepting said rotated first plane of parallel light beam signals forming first parallel planes of uniformly diverging light ray signals perpendicular to said first plane and toward said image plane, said means having means intercepting said second rotated planes of inverted polarity parallel light beam signals and like forming uniformly diverging inverted polarity light ray signals in second parallel planes towards said image planes, said first and second parallel planes of diverged light ray signals being coplanar;

means intercepting and imaging said light ray signals in said rotated coplanar parallel planes forming image line signals in a fan pattern in said image plane analogous to said x-ray beam fan pattern for each said x-ray fan rotational angle;

means dispersing light disposed in front of said means diverging said second plane of inverted polarity parallel light beam signals, said light disperser effectively intercepting and dispersing said light beam signals into neighboring said image line signals in said image plane, said light disperser having a light transmission directional characteristic forming strips of inverted polarity image line signals having an inverted polarity gaussian-shaped intensity distribution profile, said gaussian-shaped image strip profile increasing in intensity and amplitude and width as a function of the intensity and number of adjacent inverted polarity light beam signals contributing dispersed light, the light integral of adjacent gaussian-shaped dispersions being a like gaussian-shaped dispersion of increasing intensity and width proportional to said object size and density, said gaussian-shaped inverted polarity image strip signals being in register and colinear with said image line signals formed by said first plane parallel light beam signals said diverged into said coplanar parallel planes;

means sensing and storage integrating the light intensity of said fan patterns of image line signals for elemental points in said image plane, said elements of said means having geometric correspondence with said image plane elemental points, an elemental object volume in said object cross-section layer attenuating x-ray beams in said rotated fan pattern generating corresponding image line signals intersecting and defining the location of said elemental object in said image plane, being a center of spatial correlation, an x-ray opaque cylindrical volume in said object cross-section intercepting and attenuating a multiplicity of x-ray beams in said fan patterns generating corresponding strips of image line signals, in said first fan pattern, having rectangular intensity profiles intersecting at said center of spatial correlation, being said sensed and integrated for said elemental image plane points and having an amplitude distribution with a constant level circular area of amplitude equal to the integral sum of said intersecting rectangular profile image line signal strips, and radially thereafter the amplitude initially decreasing sharply followed by a gradual decreasing amplitude, proportional to the arc sine of the ratio of the object's radius to the said radial distance, being the basic uncorrected fully excited system response, said amplitude distribution being closely approximated as a cylindrical distribution superposed on a gaussian-shaped radially spreading distribution, said spread distribution being superfluous partial correlation and integration of image line signals of cross-section image reconstruction according to said arc sine function, having increasing superfluous spread amplitudes with said object size and density, said inverted polarity gaussian shaped intensity profile image line signal strips generated by said x-ray opaque cylindrical object volume being light sensed, correlated and integrated having an inverted gaussian shape amplitude distribution radially from said center of spatial correlation, said inverted gaussian shape distribution and said superfluous spread distribution integrating to a constant amplitude level having said cylindrical amplitude distribution superposed providing a corrected reconstruction attenuation amplitude distribution of said cylindrical object volume, uniform density elemental cylindrical object volumes represented by constituent cylindrical volumes having rectangular attenuation profiles being like corrected, typical human cross-section layer having various size and shape objects and of various densities which could be represented by constituent said uniform density cylindrical volumes, attenuating said x-ray beam fan patterns, generate corresponding said image line signals and said inverted polarity correcting image line gaussian shape profile signals, forming said amplitude distributions like corrected for superfluous spread amplitude distribution;

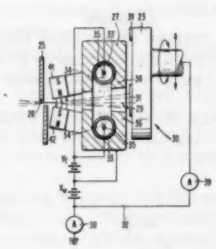
means for displaying said stored amplitude distribution of said spatial correlation and integration for said elemental object image points in the storage means of said mean sensing and storage integrating, said display having geometrical correspondence with said object image plane points.

4,135,097

ION IMPLANTATION APPARATUS FOR CONTROLLING THE SURFACE POTENTIAL OF A TARGET SURFACE

John L. Forneris, Lagrangeville; William W. Hicks, Wappingers Falls; John H. Keller, Newburgh; Charles M. McKenna, Fishkill, and James A. Seirmarco, Buchanan, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1977, Ser. No. 794,276
Int. Cl.[2] A61K *27/02*
U.S. Cl. 250—492 B **6 Claims**



1. Ion beam apparatus consisting of means for generating a beam of ions and directing said beam along a column to the surface of a target for bombarding said target with said ion beam, and means for measuring the ion beam current and controlling the surface potential of the target including

walls spaced adjacent to and electrically insulated from said target and surrounding said beam whereby the walls and target provide an electron confining cage,

electron source means for providing variable quantities of electrons within said cage,

means for measuring the target current,

means for combining and measuring the target and the wall currents to provide said ion beam current measurement,

means between said target and said electron source for inhibiting direct rectilinear radiations between said source and said target, and

means for varying the quantities of provided electrons to control the target current and thereby the target surface potential.

4,135,098
METHOD AND APPARATUS FOR CURING COATING MATERIALS

Harden H. Troue, Plainfield, Ind., assignor to Union Carbide Corporation, New York, N.Y.

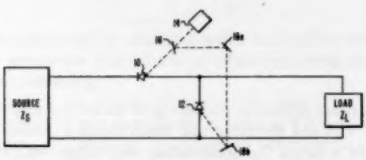
Filed Nov. 5, 1976, Ser. No. 739,120
Int. Cl.[2] F21V 7/20
U.S. Cl. 250—492 R 4 Claims

1. A method for preventing the deposition of vapors on a reflector module surface used to direct ultraviolet radiation from a source thereof to a substrate coated with a coating to be cured by such ultraviolet radiation in a system including an enclosure having a treating chamber and a first and second tunnel with the first tunnel located upstream of said chamber relative to said coated substrate moving through said enclosure and the second tunnel located downstream of said chamber, said treating chamber having at least one linear source of said ultraviolet radiation mounted therein and having at least one reflector module for directing said ultraviolet radiation to the surface of the moving substrate, which method comprises partially surrounding said reflector module with a liquid cooled heat sink separated from said reflector module, permitting only radiation heat transfer between said reflector module surface and said liquid cooled heat sink, and controlling the radiation heat transfer whereby the temperature of the reflector module surface is always at a temperature at least as high as the temperature of the coating to be cured on said moving substrate.

4,135,099
HIGH ENERGY, SHORT DURATION PULSE SYSTEM

Richard J. Fiedor, Penn Hills, and Maurice H. Hanes, Murrysville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1977, Ser. No. 833,624
Int. Cl.[2] G02B 27/00
U.S. Cl. 250—551 5 Claims

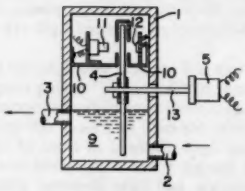


1. A system for switching a high energy, short duration pulse from a high energy source to an impedance matched series load, comprising a first light activated semiconductive device having at least one rectifying junction and an on impedance less than the source, serially connected between the high energy source and the series load, a second light activated semiconductive device having at least one rectifying junction and an on impedance less than the load, which second light activated semiconductive device is shunted across the load, and a fast rise time laser light source with means for sequentially directing the laser light output onto the first and then the second semiconductive device, whereby turn-on of the first device switches the high energy from the source to the load, while sequential turn-on of the second device short circuits the load and terminates the energy pulse.

4,135,100
METHOD AND APPARATUS FOR DETECTING CONCENTRATION OF LIQUID

Yoshiaki Harada, Hachioji; Kazuo Okamura, Kanagawa, and Masahiro Kondo, Hachioji all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1977, Ser. No. 821,204
Claims priority, application Japan, Aug. 6, 1976, 51/93172
Int. Cl.[2] G01N 21/26
U.S. Cl. 250—573 4 Claims

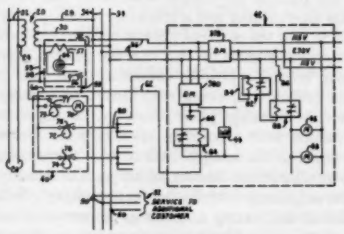


2. An apparatus for detecting concentration of liquid which comprises a detecting cell for containing therein the liquid of which concentration is to be measured, a net or lattice screen member having a liquid curtain-forming portion, driving means for driving said screen member so that the liquid curtain-forming portion of said screen member is dipped in the liquid in the detecting cell and then pulled out from the liquid, and a light source and a photoelectric converter element which are disposed to confront each other with the screen member interposed therebetween.

4,135,101
METHOD AND APPARATUS FOR CONTROLLING LOADS IN ELECTRIC POWER SYSTEMS BY REDUCTION OF PEAK LOADS

Glenn S. Young, Lee's Summit, Mo., and Arthur Laudel, Jr., Leawood, Kans., assignors to Power Monitors, Inc., Kansas City, Mo.

Filed Jul. 8, 1977, Ser. No. 813,816
Int. Cl.[2] H02J 1/00
U.S. Cl. 307—39 45 Claims



1. A load management system for reducing the load in an electrical power distribution network having at least one remotely located distribution transformer that is capable of supplying electrical power to at least one associated transformer load by means of at least one alternating current distribution line, said system comprising:

power monitor means for monitoring the power load on said distribution transformer, said power monitor means comprising a current transformer means for measuring current flow within said alternating current distribution line, said current transformer means being operable to produce a secondary current which is related to the measured current flow and transducer means for converting said secondary current into a reading representation of the load

on said distribution transformer, said transducer means being comprised of a bimetal spiral coil, said bimetal spiral coil being electrically coupled with said current transformer means such that said secondary current is caused to flow through said coil to vary the temperature of said coil in accordance with the magnitude of said secondary current, said bimetal spiral coil having one end rigidly anchored and the other end free to move in accordance with the temperature of said coil to provide said reading representation of the load on said distribution transformer;

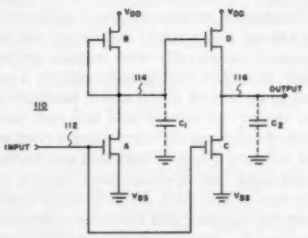
first switch means for producing an activation signal whenever said reading is above a preset control point; and

means for reducing the power load on said distribution transformer in response to said activation signal.

4,135,102
HIGH PERFORMANCE INVERTER CIRCUITS

Robert S. Green, Richardson; Harold W. Dozier, and Vernon G. McKenny, both of Carrollton, all of Tex., assignors to Mostek Corporation, Carrollton, Tex.

Filed Jul. 18, 1977, Ser. No. 816,363
Int. Cl.[2] H03K *19/08, 19/40, 17/04*
U.S. Cl. 307—205 **2 Claims**



1. An integrated circuit for inverting a binary logic signal comprising:

a first depletion mode FET coupling a drain voltage to a first output node, the gate of the first depletion mode FET being connected to the first output node,

a first enhancement mode FET coupling the first output node to a source voltage, the gate of the first enhancement mode FET being connected to an input terminal,

a second depletion mode FET coupling a drain voltage to a second output node, the gate of the second depletion mode FET being connected to the first output node, and

a second enhancement mode FET coupling the second output node to a source voltage, the gate of the second enhancement mode FET being connected to the input terminal,

wherein the absolute value of the threshold voltage of the second depletion mode FET is less than the absolute value of the threshold voltage of the first depletion mode FET.

4,135,103
LOGIC TRANSITION CIRCUITS

David E. Fulkerson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 22, 1977, Ser. No. 808,851
Int. Cl.[2] H03K *19/08, 19/20, 5/02*
U.S. Cl. 307—207 **25 Claims**

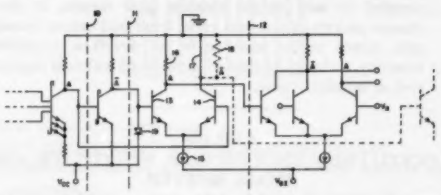
1. A transition circuit for interfacing logic circuit gates of differing logic family types, said transition circuit having first and second inputs adapted for connection to an input logic gate circuit of a first logic family type, where said input logic gate circuit has a first input logic gate input and an input logic gate output and where said first logic family type has a first family characteristic pair of logic state voltage levels, and said transition circuit having a first output adapted for connection to an output logic gate circuit of a second logic family type, where said second logic family type has a second family characteristic pair of logic state voltage levels, said first family characteristic pair separated by a voltage value differing from that voltage value separating said second family characteristic pair, said transition circuit comprising:

a direct differential transistor having a control terminal serving as said first input which is adapted for connection to said input logic gate output in a manner such that any logic signal present at said input logic gate output will be presented to said direct differential transistor uninverted, said direct differential transistor also having first and second direct differential transistor terminals;

a direct differential transistor load means having a first and second direct differential transistor load means terminals, said first direct differential transistor load means terminal adapted for connection to a first voltage source and said second direct differential transistor load means terminal electrically connected to said first direct differential transistor terminal;

an indirect differential transistor having a control terminal serving as said second input and having first and second indirect differential transistor terminals;

an indirect differential transistor load means having first and second indirect differential transistor load means terminals, said first indirect differential transistor load means terminal adapted for connection to said first voltage source and said second indirect differential transistor load means terminal electrically connected to said first indirect differential transistor terminal;



a first effective current source means having first and second current source terminals, said first current source terminal electrically connected to both said second direct differential transistor terminal and said second indirect differential transistor terminal, and said second current source terminal adapted for connection to a second voltage source; and

a transistor coupling means having first and second coupling means terminals and containing a couping transistor, said first coupling means terminal adapted for connection to said input logic gate and said second coupling means terminal electrically connected to said indirect differential transistor control terminal in such a manner that any logic signal presented to said indirect differential transistor, obtained from logic signals occurring in said input logic gate, is at a logic state voltage level of said first family characteristic pair opposite that logic state voltage level of any corresponding signal appearing at said input logic gate output.

4,135,104
REGENERATOR CIRCUIT

Reginald A. Allen, Topanga, Calif., assignor to TRW, Inc., Redondo Beach, Calif.

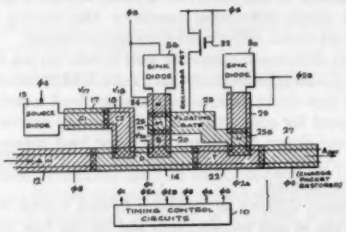
Filed Dec. 2, 1977, Ser. No. 856,780
Int. Cl.[2] H01L *27/10, 29/78;* **H03K** *19/08, 5/18*
U.S. Cl. 307—221 D **14 Claims**

1. A regenerator circuit for charge coupled devices, for receiving at least a pair of charge packet inputs, at least one of which represents binary valued input data by the presence or absence of a charge packet which may be diminished from

nominal value, and for providing a regenerated charge packet without inversion comprising the combination of:

storage electrode means for receiving the charge packet inputs, the storage electrode means overflowing all charge in excess of a charge packet of the nominal value;

output transfer gate means coupled to said storage electrode means for receiving charge packets of nominal value therefrom;



and sensing gate means including overflow detecting means coupled to said storage electrode means and shunt channel means responsive to said overflow detecting means and coupled to said output transfer gate means, to shunt charge packets of nominal value from said output transfer gate means in the absence of an overflow condition, whereby a charge packet of diminished value is regenerated at nominal value.

4,135,105

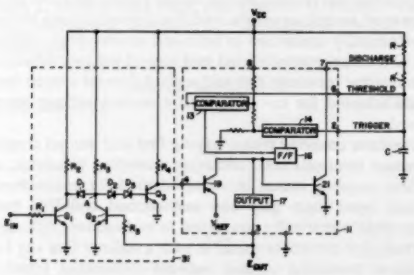
LOCKED FREQUENCY DIVIDER, MULTIPLIER AND PHASE SHIFTER

Thomas P. Stange, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 646,683, Jan. 5, 1976, abandoned. This application Apr. 28, 1977, Ser. No. 791,675

Int. Cl.[2] H03K *21/00*

U.S. Cl. 307—225 R **3 Claims**



1. A circuit for controlling the operation of a timer with a timing circuit operating in an astable mode and providing a train of output pulses from an output terminal, comprising:

a control circuit having an input terminal, said control circuit being interposed between an input signal on said input terminal and the timer to perform one of the functions of multiplying and dividing of the input signal frequency according to the ratio between the input frequency and the frequency of the train of output pulses, wherein said timer includes a reset terminal settable at a first voltage level for causing the timer to be set to a quiescent state and settable at a second voltage level for causing the timer to be set in an astable mode to provide the train of output pulses, and wherein said control circuit is responsive to said input signal and the output pulses of the timer to apply the first and the second level voltages selectively to said reset terminal for enabling the timer to perform one of said functions of multiplying and dividing of the input signal.

4,135,106

EDDY-CURRENT RETARDERS WHOSE STATOR COMPRISES A RING OF ELECTRO-MAGNETS

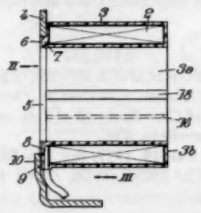
Jean-Marie Jollois, Courbevoie, France, assignor to Labavia S.G.E., Paris, France

Filed Jul. 25, 1977, Ser. No. 818,858

Claims priority, application France, Jul. 30, 1976, 76 23474

Int. Cl.[2] H02K *49/02*; H01F *15/10*

U.S. Cl. 310—105 **10 Claims**



1. An eddy-current retarder or speed reducer for vehicles, comprising a stator and a rotor, the stator itself comprising a support mounted transversely with respect to the axis of the speed reducer, through which passes centrally a portion of the vehicle shaft to be slowed down and at least one ring of electro-magnets spread out around said axis and carried by said support, each electro-magnet comprising a core mounted axially on said support, a coil of insulated conducting wire surrounding said core, and a polar piece with a cross-section greater than that of said core, inserted in the axial end of this core opposite the support, and the rotor comprising an armature disk made of a ferro-magnetic material adapted to be interlocked with said shaft portion and mounted so as to rotate facing each ring of polar pieces, each said coil being housed in a case of a hard insulating material of thermosetting plastic presenting at least one first excentric angular wedging element capable of co-acting with at least one second complementary wedging element provided excentrically on the support, said first and second wedging elements being formed respectively by a projection provided on one of said case and said support and by a recess provided correspondingly on the other of said case and said support, each coil case being directly moulded as a single block on the coil before it is mounted on the support whereby each said coil is entirely and intimately embedded in said block, and the wedging element presented by said case being moulded integrally therewith.

4,135,107

MULTI-PHASE ALTERNATING CURRENT MACHINE WITH STEPPED STATOR

Evert M. H. Kamerbeek, and Herman G. Lakerveld, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 21, 1975, Ser. No. 579,599

Claims priority, application Netherlands, May 27, 1974, 7407056

Int. Cl.[2] H02K *3/00*

U.S. Cl. 310—179 **10 Claims**

1. An multi-phase alternating current machine which comprises: a rotor, a stator having a smooth internal surface, and a winding having the coils thereof distributed in a substantially sinusoidal array, said winding consisting of a plurality of coils of conductors, the active part of all said coils being disposed in the air gap between the smooth stator surface and the rotor, the radial dimension of all of said conductors in each coil in each phase in the radial direction being constant through successive angles of 90/n °el., where n is an integer > 1, said radial dimension changing from a maximum value x to a minimum value

x/n in progressive equal steps and subsequently increasing from a minimum value x/n to a maximum value x in equal progressive steps, the wire distributions of the consecutive

phases along the circumference are each time shifted through an angle of 2 x 90/M °el. in the same direction, M/n being an integer for odd values of M.

4,135,108

QUARTZ RESONATOR WITH ELECTRODES THAT DO NOT ADHERE TO THE CRYSTAL

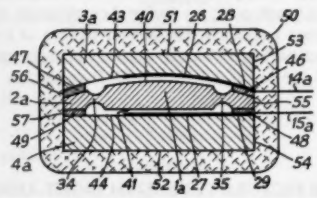
Raymond J. Besson, Besancon, France, assignor to L'Etat Francais represente par le Delegue Ministeriel, Paris, France

Filed Jan. 14, 1977, Ser. No. 759,488

Claims priority, application France, Jan. 16, 1976, 76 01035; May 31, 1976, 76 16289

Int. Cl.² H01L *41/10*

U.S. Cl. 310—344 **33 Claims**



1. A piezoelectric resonator comprising a gas tight housing, first and second disks made of a dielectric material, said disks being arranged face to face and spaced from one another; a piezoelectric crystal arranged between said first and second disks in the space therebetween in a predetermined fixed position with respect to one of the disks; a first non-adhering metal electrode formed by metallization on the face of the first disk opposite the crystal; a second non-adhering metal electrode formed by metallization on the face of the second disk opposite the crystal; a first conductor connected to the first electrode and extending outside the housing; a second conductor connected to the second electrode and extending outside the housing, means for suspending the crystal in said permanent fixed position to maintain the active central portion of the crystal located opposite said first and second electrodes, said suspending means comprising means for fixing said crystal on said one of said first and second disks in said predetermined position at a spaced distance of between 0.5 and 50 microns, said mounting means comprising means for insuring that said space between the crystal and the disk to which it is fixed remains the same upon disassembly and reassembly of the resonator; means for maintaining the assembly of said first and second disks in position inside the housing; and removable bracing means positioned between and engaging said first and second disks for maintaining said disks spaced from one another; said bracing means being formed only of a single ring made of a dielectric material which surrounds, at a distance, the active central portion of said crystal and having a height such that the free spacing provided between the active central portion of the crystal and the electrode on the disk to which the crystal is not fixed has a controllable thickness of less than a few dozen microns.

4,135,109

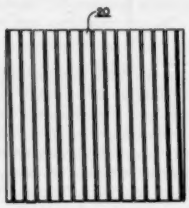
HIGH POWERED PIEZOELECTRIC CYLINDRICAL TRANSDUCER WITH THREADS CUT INTO THE WALL

Larry T. Gingerich, Annapolis; John H. Thompson, Severna Park, both of Md., and Robert H. Whittaker, New Alexandria, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1977, Ser. No. 831,720

Int. Cl.² H01L *41/04*

U.S. Cl. 310—369 **5 Claims**



1. A transducer comprising:

(A) a radially poled tubular piezoceramic cylinder;

(B) electrode means on the inside and outside walls of said cylinder;

(C) said cylinder having threads cut into one of said walls along the length thereof, at a predetermined pitch; and

(D) the ratio of thread width to cylinder wall thickness being less than unity.

4,135,110

ELECTRICAL DISCHARGE LAMP

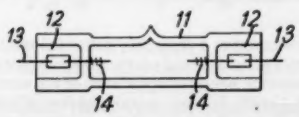
Alan G. Chalmers; Frank L. Whittaker, and David O. Wharmby, all of London, England, assignors to Thorn Electrical Industries Limited, London, England

Continuation-in-part of Ser. No. 656,268, Feb. 9, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,551

Claims priority, application United Kingdom, Feb. 13, 1975, 6181/75

Int. Cl.² H01J *61/20, 61/22*

U.S. Cl. 313—225 **9 Claims**

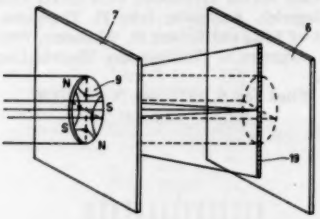


1. In an electrical discharge lamp comprising a sealed light-transmitting envelope having arc electrodes spaced and sealed therein, leads for said electrodes and a volatile fill in said envelope, the improvement which consists in a fill comprising in combination an amount of mercury in excess of 50 μmol cm^{-3}, a rare gas and, at least during operation, a volatile complex halide compound of tin and sodium.

4,135,111
SHADOW MASK HAVING MAGNETIC QUADRUPOLES AROUND EACH MASK APERTURE

Jan Verweel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 16, 1976, Ser. No. 751,368
Claims priority, application Netherlands, Dec. 24, 1975, 7515039
Int. Cl.[2] H01J 29/07, 31/20
U.S. Cl. 313—403 7 Claims

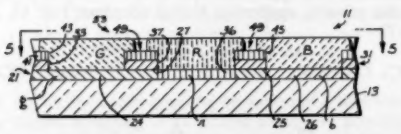


1. A colour cathode ray tube comprising, in an evacuated envelope: means to generate a plurality of electron beams directed toward a common region along convergent paths; a luminescent screen comprising a large number of luminescent elongated, substantially parallel regions, each emitting light of a predetermined colour in response to being struck by one of said beams; and colour selection means positioned between said beam generating means and said screen and having a plurality of apertures each aligned with respect to said beams to allow each of said beams to strike only those of said regions emitting light of a corresponding colour, said colour selection means comprising magnetized means for producing four magnetic poles of alternately north and south polarity around the perimeter of each of said apertures to form a quadrupole magnetic lens field in each of said apertures for focusing electrons passing therethrough in a direction substantially perpendicular to the longitudinal direction of said elongated regions and defocusing the electrons in a direction substantially parallel to said elongated regions.

4,135,112
COLOR CATHODE RAY TUBE SCREEN STRUCTURE PROVIDING IMPROVED CONTRAST

Mahlon B. Fisher, Skaneateles; Anthony V. Gallaro, Auburn, and George N. Williams, Seneca Falls, all of N.Y., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Nov. 2, 1973, Ser. No. 412,143
Int. Cl.[2] H01J 29/26, 31/20
U.S. Cl. 313—470 7 Claims



1. An improvement in a discretely patterned multi-window color screen structure disposed on the inner surface of a cathode ray tube viewing panel, whereof each of the window areas exhibits a peripherally defined smoothness free of indentations such being similar to the shape of the apertures of a related pattern mask member, said improvement comprising:

a substantially continuous and substantially transparent primary layer of a first heat formable optical filter material of a first specific hue adhered to the inner surface of said panel, said primary layer having second and third patterns of related window areas formed therein each being free of peripheral indentations;

a substantially continuous and substantially transparent secondary layer of a second heat formable optical filter material of a second specific hue, superposed on said primary layer and the second of said window pattern areas formed therein, to provide a single-layer array of window defined second filter elements of said second specific hue in said screen structure, said secondary layer having first and third patterns of discrete window areas formed therein whereof the first window pattern array defines areal portions of said primary layer to provide a single-layer array of first filter elements of said first specific hue in said screen structure that are free of peripheral indentations, said third window pattern in said secondary layer being superposed over said third window patterns in said primary layer;

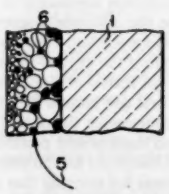
a substantially continuous and substantially transparent tertiary layer of a third heat formable optical filter material of a third specific hue superposed over said secondary layer and said third superposed window pattern areas to provide a single-layer array of third filter elements of said third specific hue in said screen structure, said tertiary layer having open first and second window patterns superposed on like respective window areas in said primary and secondary layers, said superimposed primary, secondary and tertiary layers being combined uniformly to provide a substantially opaque uniform interstitial webbing fully surrounding each of the respective filter windows in the screen structure by uniform peripheral encompassment free of indentations; and

three patterns of related cathodoluminescent phosphor elements of first, second and third hues substantially similar to the hues of said first, second and third single-layer filter elements, each pattern of phosphor elements being disposed on a respective single-layer pattern of evenly defined optical filter window elements of substantially like hue.

4,135,113
LINE-TYPE PICTURE TUBE WITH LIGHT-ABSORBING PARTICLES MIXED WITH BLUE PHOSPHOR

Asahide Tsuneta, Kawasaki; Yasuo Ohta, Fukaya; Makoto Ikegaki, Yokohama, and Takeo Ito, Fukaya, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 7, 1977, Ser. No. 775,367
Claims priority, application Japan, Mar. 8, 1976, 51-24227
Int. Cl.[2] H01J 29/30, 29/28
U.S. Cl. 313—470 1 Claim



1. A color picture tube which comprises a glass panel;

a plurality of groups consisting of green, blue and red phosphor strips on the inner surface of said glass panel;

black nonluminescent strips laid between said phosphor strips and the inner surface of said glass panel;

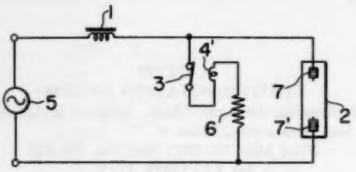
and wherein said blue phosphor strip contains 0.1% to 3.0% by weight of black light-absorbing particles based on the weight of said phosphor dispersed throughout the strip for reducing reflection.

4,135,114

STARTING DEVICE FOR DISCHARGE LAMP

Kenji Narikiyo, Tokyo, Japan, assignor to Hitachi, Ltd., Japan

Filed Jul. 28, 1977, Ser. No. 819,860
Claims priority, application Japan, Jul. 30, 1976, 51-90343
Int. Cl.[2] H01J 7/44; H05B 41/18
U.S. Cl. 315—47 7 Claims



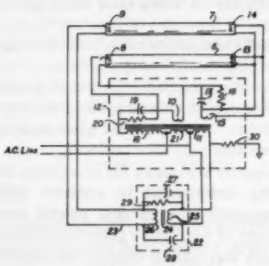
1. A starting device for a discharge lamp comprising a bimetal switch circuit including a bimetal switch which is closed at a normal temperature and opened at a high temperature and a fixed resistance element connected in series therewith, a discharge tube, said switch circuit being connected across both terminals of said discharge tube, an inductive ballast, and an AC power source connected through said inductive ballast across said discharge tube, and the total resistance value R_o (in ohms) of said bimetal switch circuit at the normal temperature and the supply voltage V_s (in volts) having the relation $V_s/R_o \leqq 1$.

4,135,115

WATTAGE REDUCING DEVICE FOR FLUORESCENT FIXTURES

Robert R. Abernethy, 7295 Walton Rd., Walton Hills, Ohio 44146, and James G. Bishop, 19229 Briarwood Ln., Strongsville, Ohio 44136

Filed Apr. 21, 1977, Ser. No. 789,548
Int. Cl.[2] H05B 41/16
U.S. Cl. 315—97 11 Claims



1. A device which is wired in series between a rapid start ballast and cathode of one of the lamps of a coventional rapid start fluorescent lighting fixture to reduce the wattage consumed by the lamp, comprising:

a housing;

at least two pairs of leads extending from the housing; and including a pair of input leads and a pair of output leads;

means disposed in the housing and wired in series with said at least two pair of leads for reducing electrified current flowing to the fixture without reducing the voltage;

a step-up transformer having a primary winding connected to the input leads and a secondary winding connected to the output leads;

a first capacitor connecting one input lead to one output lead;

a second capacitor, similar to the first capacitor, connecting the other input lead to the other output lead;

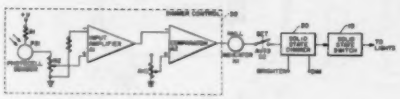
a resistor connected in parallel with one capacitor.

4,135,116

CONSTANT ILLUMINATION CONTROL SYSTEM

Maurice N. Smith, Oxnard, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 16, 1978, Ser. No. 870,048
Int. Cl.[2] H05B 37/02
U.S. Cl. 315—158 14 Claims



1. An illumination level control system for maintaining a predetermined level of total illumination in an area of controlled lighting comprising:

a. lighting means for generating artificial illumination in the area of controlled lighting;

b. a first solid state switch coupled between said lighting means and a source of alternating current power; said first solid state switch having a gate input and being operable by a gating signal applied to the gate input to electrically connect or disconnect said lighting means and the source of alternating current power;

c. monitoring means for monitoring the level of illumination in the area of controlled lighting and generating an illumination level voltage corresponding thereto;

d. comparing means coupled to said monitoring means for comparing the illumination level voltage from said monitoring means with a reference voltage and generating an output difference voltage corresponding to the difference between the output of said monitoring means and the reference voltage;

e. a monostable multivibrator circuit coupled to the gate input to said first solid state switch for generating the gating signal operable to switch said first solid state switch into and out of the conducting state;

f. a timing circuit coupled between said comparing means and said monostable multivibrator circuit operable to establish the external time constant of said monostable multivibrator circuit;

g. a triggering circuit coupled between said monostable multivibrator and the source of alternating current power for triggering said monostable multivibrator;

h. said timing circuit in combination with said triggering circuit being operable to control the gating signal from said monostable multivibrator and, thereby, regulate the amount of power supplied to said lighting means.

4,135,117

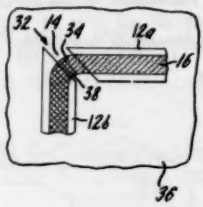
VACUUM FLUORESCENT DEVICE WITH CONTINUOUS STROKES

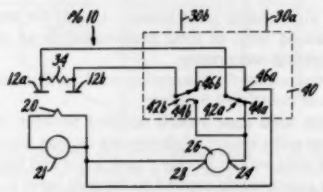
Richard DuBois, North Caldwell, N.J., assignor to Wagner Electric Corporation, Parsippany, N.J.

Filed Mar. 20, 1978, Ser. No. 887,865
Int. Cl.[2] H05B 37/00, 39/00, 41/00
U.S. Cl. 340—758 22 Claims

1. A fluorescent display device comprising an insulating substrate, at least two spaced apart electrodes on said substrate, said at least two electrodes being electrical conductors and a phosphor area in electrical contact with said at least two electrodes, said phosphor area coating at least part of said substrate

in a continuous area between said at least two electrodes and forming a resistive bridge therebetween the coating in said





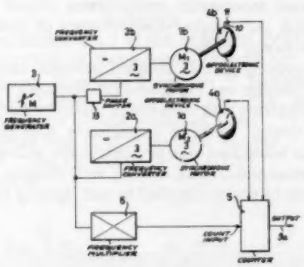
continuous area being conductive and having a substantially higher resistance than said at least two electrodes.

4,135,118

SYSTEM FOR DETERMINING THE RELATIVE ANGULAR POSITIONS OF THE ROTORS OF TWO SYNCHRONOUSLY DRIVEN SYNCHRONOUS MOTORS

Arnold Seeger, Herzogenrath, and Wilfried Schalt, Jülich, both of Germany, assignors to Kernforschungsanlage Jülich Gesellschaft mit beschrankter Haftung, Jülich, Germany

Filed Oct. 5, 1976, Ser. No. 729,877
Int. Cl.[2] G05B *19/28*
U.S. Cl. 318—85 **5 Claims**



1. A system for measuring the relative angular positions of the magnetic-pole rotors of two synchronous motors, comprising:

a single frequency generator energizing both of said synchronous motors for driving same at rates determined by the frequency of said generator;

respective optoelectronic devices connected to said rotors for generating respective pulses upon each revolution of the respective rotor;

a start-stop counter having a start input, a stop input and a count input;

means connecting one of said optoelectronic devices to said start input and the other of said optoelectronic devices to said stop input; and

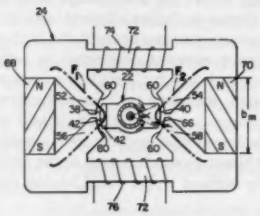
a phase-locked loop frequency multiplier connected between said frequency generator and said count input to feed pulses to said counter in the interval between receipt of start and stop pulses from said optoelectronic devices at a rate constituting a multiple of the frequency of said generator, the count registered in said counter representing the relative positions of said rotors.

4,135,119

LIMITED ROTATION MOTOR

Pierre J. Brosens, Belmont, Mass., assignor to General Scanning, Inc., Watertown, Mass.

Filed Mar. 23, 1977, Ser. No. 780,475
Int. Cl.[2] H02K *33/10*
U.S. Cl. 318—128 **22 Claims**



1. A limited rotation motor useful in an optical scanner or the like comprising a stator that defines a plurality of axially extensive stator poles,

an axially extensive rotor mounted for limited rotation relative to said stator and having axially extensive rotor poles for interaction with said stator poles,

an axially extending rotor shaft at each end of said rotor, a bearing on each said rotor shaft for radially supporting said rotor relative to said stator so that an axially extensive air gap is defined between each rotor pole and adjacent stator poles,

one of said shafts adapted to carry a device such as a mirror for rotation therewith,

a restoring force arrangement for locating said rotor in an initial reference position and tending to restore said rotor to said initial reference position when said rotor has been rotated from said reference position,

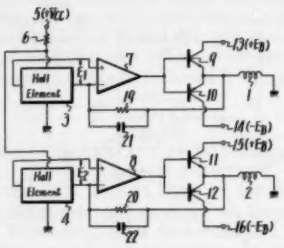
drive coil means on said stator for producing drive flux, said stator being constructed to conduct said drive flux through magnetic circuits that extend across air gaps between faces of said stator poles and said rotor poles to interact with bias flux to change the angular position of said rotor,

said stator including effectively opposed bias flux magnetic circuits that extend across air gaps between faces of said stator poles and said rotor poles which produce radial forces acting upon said rotor effectively in opposite radial directions, a face of a pole in one of said bias flux magnetic circuits having a transversely extending discontinuity of limited axial extent at a selected position along the axial length of said pole face whereby the radial forces produced by said bias flux magnetic circuits are unbalanced to continually produce a resultant radial force of relatively small value compared to the total radial force provided by a given said bias flux, said resultant radial force effective to urge said rotor and its shafts radially in its said bearings to maintain a well defined radial position of said rotor over the range of limited rotation of said rotor while major portions of the applied radial forces produced by said bias flux magnetic circuits are effectively opposed and do not have load effect on said bearings.

4,135,120
DRIVE CIRCUIT FOR A BRUSHLESS MOTOR

Susumu Hoshimi, and Toshio Sato, both of Yokohama, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 12, 1978, Ser. No. 868,732
Claims priority, application Japan, Jan. 20, 1977, 52-5232; Jan. 19, 1977, 52-4969[U]
Int. Cl.² H02K 29/00
U.S. Cl. 318—138 **11 Claims**



1. A drive circuit for a brushless motor of the type having a rotor magnet and energizable stator windings, said drive circuit comprising:

position sensing means for sensing the rotary position of said rotor magnet and for generating varying position signals corresponding to said sensed rotary position; and

a plurality of amplifier means coupled to said position sensing means and responsive to said position signals to produce drive currents, said amplifier means being coupled to said stator windings to supply said drive currents thereto and each amplifier means including a voltage amplifier stage having a linear gain characteristic for amplifying the position signal applied thereto, a current amplifier stage coupled to said voltage amplifier stage and responsive to said amplified position signal to produce a drive current at an output thereof to supply same to a stator winding, and feedback means interconnected between the output of said current amplifier stage and an input to said voltage amplifier stage, said feedback means including a resistor and a capacitor connected in parallel and operative as a low pass filter circuit to prevent harmonics of the drive current frequency from being transmitted to said stator winding thereby preventing notching in said drive current.

4,135,121
VARIABLE-SPEED DRIVE SYSTEM WITH HYDROSTATIC TRANSMISSION AND ELECTRIC SHUNT MOTOR

Hans W. Stuhr, Aschaffenburg, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Continuation-in-part of Ser. No. 564,594, Apr. 3, 1975, abandoned. This application May 16, 1977, Ser. No. 797,179
Claims priority, application Fed. Rep. of Germany, Apr. 4, 1974, 2416363
Int. Cl.² H02P 5/00
U.S. Cl. 318—358 **15 Claims**

12. A system for driving a load, comprising:

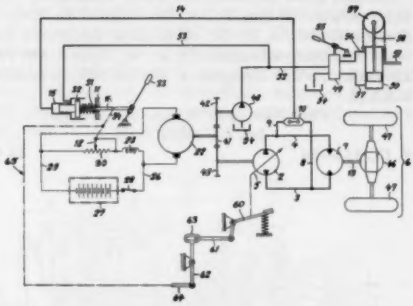
a source of electric current;

an electric motor having an armature and a field winding connected in parallel across said source;

a generator of hydraulic pressure fluidically linked with a load and driven by said motor;

pressure-sensing means in the output of said generator; and

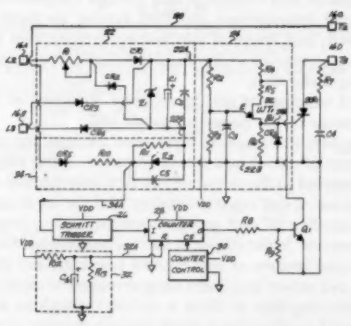
current-control means in circuit with said field winding connected to said pressure-sensing means for varying the energization of said field winding generally inversely with load over at least a part of a range of output velocities whereby the input velocity of said generator varies generally in proportion to load throughout said part of said range.



4,135,122
METHOD AND APPARATUS FOR HEATING ELECTRICAL MOTORS AND LIKE DEVICES

John R. Holmquist, Federal Way, and John E. Sherman, Tacoma, both of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Filed May 25, 1977, Ser. No. 800,204
Int. Cl.² H02P 7/00
U.S. Cl. 318—436 **38 Claims**



1. A motor heating apparatus for use with an electrical motor which includes a motor winding having first and second terminals, and a power source having first and second terminals across which appears an alternating current voltage, said motor heating apparatus comprising:

(a) first and second inputs adapted to be respectively coupled to the first and second terminals of the power source, and first and second outputs adapted to be respectively coupled to the first and second terminals of the motor winding;

(b) first means providing an electrical conducting path between said first input and said first output; and

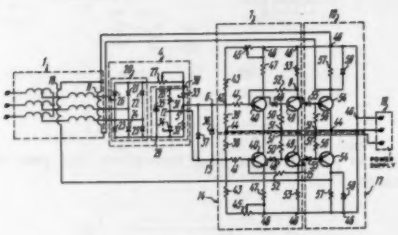
(c) second means providing an electrical conducting path between said second input and said second output for substantially an entire half-cycle of said alternating current voltage at predetermined intervals each substantially equal in duration to a selected plurality of cycles of said alternating current voltage.

4,135,123

TRANSFORMER CONTROL DEVICE

Jury D. Gupalo, ulitsa Anri Barbjusa, 22-26, kv. 25; Vladimir A. Nagaitsev, ulitsa Stroitelei, 26, kv. 6; Vladimir A. Troitsky, ulitsa Bratislavskaya, 8, kv. 86; Nikolai G. Bely, ulitsa Stepana Razina, 3, kv. 10, all of Kiev; Dmitry N. Parshin, ulitsa Kommunisticheskaya, 55, kv. 80, Toliatti, and Pavel A. Zhinzhikov, ulitsa Kostycheva, 41, kv. 195, Bryansk, all of U.S.S.R.

Filed Nov. 2, 1976, Ser. No. 737,992
Int. Cl.[2] G05F *1/38*
U.S. Cl. 323—56 **11 Claims**



1. A transformer control device featuring magnetization of at least two elements of a transformer's magnetic circuit, comprising:

a voltage comparator unit having an input connected to the output of said transformer and two outputs adapted to provide opposing polarities, the relative polarities at said outputs being a function of the output voltage of the transformer;

a first intermediate amplifier having an input and an output, said input of said intermediate amplifier being connected to one of said outputs of said voltage comparator unit;

a second intermediate amplifier having an input and an output, said input of said second intermediate amplifier being connected to another of said outputs of said voltage comparator unit;

control windings of said transformer, mounted on said two elements of the magnetic circuit; and

power amplifiers having inputs and outputs, the input and output of one of said power amplifiers being respectively connected to the output of said first intermediate amplifier and one of said control windings and the input and output of another of said power amplifiers being respectively connected to the output of said second intermediate amplifier and another of said control windings, said intermediate and power amplifiers being arranged to cause only one power amplifier to drive a current through an associated control winding for a given relative polarity at said voltage comparator outputs, whereby the current is zero in one of the control windings and a current flows in the other control winding and thereby only one of the elements of a transformer's magnetic circuit is magnetized at any given time.

4,135,124

ELECTRONIC MONITORING SYSTEM WITH SELECTIVE SIGNAL INVERTER

Robert Buck, Kirchbühlweg 128, 7995 Neukirch, Germany

Filed Jun. 20, 1977, Ser. No. 808,372
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628427
Int. Cl.[2] H01H *36/00*
U.S. Cl. 323—19 **5 Claims**

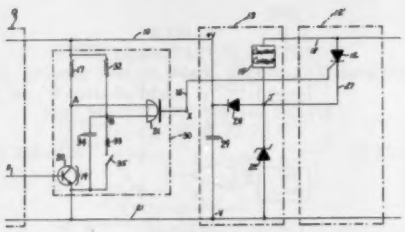
1. An electronic monitoring system comprising:

detector means sensitive to an ambient condition for generating to an output lead a binary signal assuming a predetermined value in response to a significant change in said ambient condition, said detector means being provided with a pair of power-input terminals;

a voltage-generating network provided with a pair of supply leads connected to said power-input terminals;

a source of electrical energy connected across said network for delivering a direct current to said detector means via said supply leads;

an electronic switch connected in shunt with at least part of said network across said source in series with a load, said



switch being provided with a control input connected to said output lead; and

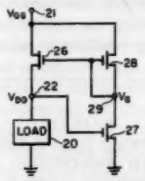
logic circuitry in said output lead selectively activable to invert said binary signal for optionally closing and opening said electronic switch upon said binary signal assuming said predetermined value, said logic circuitry including an Exclusive-OR gate having a first input coupled to said output lead and a second input provided with switchover means for alternately applying thereto two different voltages available in said network.

4,135,125

CONSTANT VOLTAGE CIRCUIT COMPRISING AN IGFET AND A TRANSISTORIZED INVERTER CIRCUIT

Toshio Oura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1977, Ser. No. 777,853
Claims priority, application Japan, Mar. 16, 1976, 51-28352
Int. Cl.[2] G05F *1/56*
U.S. Cl. 323—22 R **9 Claims**



1. An integrated circuit for supplying an electrical signal of a substantially constant voltage to a load from an electric power source, said integrated circuit having a first and a second power supply terminal between which the electric power source is to be connected and a first and a second constant voltage terminal between which the load is to be connected, said second power supply terminal being connected to said second constant voltage terminal, said integrated circuit comprising a first field effect transistor having a first source, a first drain, and a first insulated gate electrode and a transistorized inverter circuit coupled between said first and second power supply terminals and having an input and an output terminal supplied with an inverter input voltage and an inverter output voltage respectively, said inverter circuit comprising a second field effect transistor of the enhancement type, said second field effect transistor comprising a second source and a second drain electrode respectively coupled to said second power supply terminal and said inverter output terminal, and a second

insulated gate electrode connected to said inverter input terminal, the operation of said inverter being characterized by an input-output characteristic which includes first and second predetermined levels of said inverter output voltage corresponding to said inverter input voltage and a cut-off edge transitional between said first and second predetermined levels, said inverter output voltage decreasing with an increase of said inverter input voltage, said first drain electrode being connected to said first power supply terminal, said inverter input terminal being connected to said first constant voltage terminal and to said first source electrode, said inverter output terminal being connected to said first gate electrode, said inverter circuit being put into operation at said cut-off edge, thereby to supply a substantially constant voltage to the load.

4,135,126
DEVICE FOR NONCONTACT SWITCHING OF LOADED TRANSFORMER TAPPINGS

Grigory M. Rubashev, V.O. 15 Linia, 34, kv. 37; Stanislav N. Starostin, Bolsheokhtinsky prospekt, 10, korpus 1, kv. 106; Vitaly E. Pojurovsky, ulitsa Reshelnikova, 17, kv. 36, and Olga N. Gruzova, Tikhoretsky prospekt, 17, korpus 5, kv. 4, all of Leningrad, U.S.S.R.

Filed Feb. 9, 1977, Ser. No. 766,919
Int. Cl.² G05F *1/20*
U.S. Cl. 323—43.5 S **3 Claims**

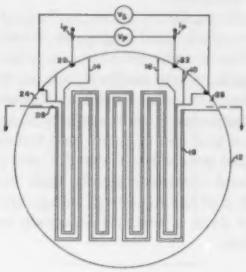
1. A device for noncontact switching of loaded transformer tappings comprising: a plurality of bridge noncontrolled rectifiers the number of which is equal to the number of transformer tappings and to which said bridge noncontrolled rectifiers are connected, said bridge noncontrolled rectifiers having positive and negative d-c terminals; a switching thyristor connected between said negative and positive terminals of each of said bridge noncontrolled rectifiers to dispose the same in the d-c link of the respective bridge noncontrolled rectifier; and switching LC-circuits connected between the like terminals of said bridge noncontrolled rectifiers.

4,135,127
DIRECT CURRENT TRANSFORMER

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of Shyam M. Khanna, Ottawa, Canada, and Eugene W. Urban, Huntsville, Ala.

Filed Mar. 29, 1977, Ser. No. 782,462
Int. Cl.² G05F *7/00*
U.S. Cl. 323—44 F **2 Claims**

1. A direct current transformer comprising:
a primary electrical conductor having a pair of opposite ends comprising transformer input terminals;
a source of D.C. signal, I_P, connected across said terminals, whereby a direct magnetic field is provided;
the material of said primary electrical conductor and level of said D.C. signal I_P being such that said primary electrical conductor is superconductive in the presence of said signal I_P, and that said signal I_P rises at least to the critical level for said superconductive material, whereby moving vortices are created in said primary electrical conductor;
a secondary electrical conductor of a magneto-resistive material, said secondary conductor being positioned closely adjacent to, but electrically insulated from, said first conductor, and having a pair of unbiased end terminals; and

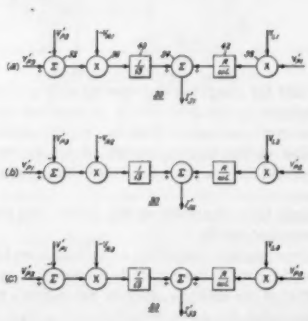


environmental means for applying a low temperature to said primary and secondary electrical conductors, said temperature being no higher than the superconducting transition of said primary electrical conductor;
whereby D.C. potential V_S appears across said terminals of said secondary conductor responsive to the application of said signal I_P across said terminals of said primary electrical conductor.

4,135,128
APPARATUS FOR SENSING THE REACTIVE OR REAL COMPONENTS OF CURRENT

Fred W. Kelley, Jr., Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Sep. 28, 1977, Ser. No. 837,485
Int. Cl.² H02J *3/18*
U.S. Cl. 323—124 **24 Claims**



1. Reactive current supply apparatus for an a-c electric power system including a critical voltage supply bus electrically separated by series impedance from load terminals which are adapted for connection to a load subject to rapid oscillatory variation of reactive current demand comprising: fixed capacitor means connected across said load terminals, fixed inductor means connected across said load terminals in series circuit relation with static switching means, said static switching means including gating means for phase controlling the conduction angle of said switching means thereby to control the magnitude of reactive current traversing said inductor means, means for generating a first electrical signal representa-

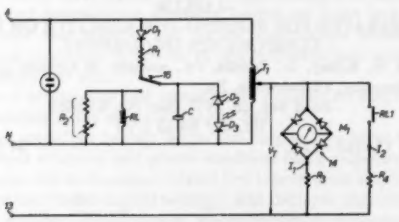
tive in direction of a phase relation of the reactive component of load current at said load terminals and representative in magnitude of the magnitude of said reactive component of load current, means responsive to said first electrical signal for so controlling said gating means that the sum of the reactive current traversing said fixed capacitor means and said fixed inductor means is substantially equal and opposite to said reactive component of load current, wherein said means for generating said first electrical signal representative of the phase relation and magnitude of said reactive component of load current further comprises:

means for rendering said first electrical signal representative of the phase relation and magnitude of said reactive component of load current more than two times per cycle of source frequency, said rendering means including means for generating second and third electrical signals respectively representative of said load current and the time rate of change of said load current, said rendering means including signal processing means for processing said second and third electrical signals with electrical signals representative of line to neutral voltage waveforms which are derived from a selected reference location in said power system.

4,135,129
GROUND FAULT CIRCUIT INTERRUPTOR TEST APPARATUS

John K. Johnston, 6/48 Albert St., Belmore, New South Wales, 2192, and Frederick A. Edwards, 53 Lady Game Dr., Killara, New South Walles, 2071, both of Australia

Filed Feb. 10, 1977, Ser. No. 767,626
Claims priority, application Australia, Feb. 10, 1976, PC4794
Int. Cl.[2] G01R *31/02*
U.S. Cl. 324—51 **2 Claims**



1. A test unit for checking the operation of a current operated core balance protective device connected between the active and neutral conductors of an AC supply circuit through the application to the supply circuit of an AC test leakage current selectable from a predetermined range, said unit comprising:

A. Terminals for connection to the active and neutral conductors and to earth,

B. First circuit means including a variable auto transformer connected between the active and neutral terminals, with the output of the auto transformer providing a test voltage between it and the earth terminal, and a high impedance metering circuit connected between the auto transformer output and the earth terminal to provide a read-out of the test voltage, the high impedance being of such value that the current flowing therethrough and from the supply circuit whilst the test voltage is being selected will be sufficiently small that even when applied for a prolonged period of time the time-current characteristic will not cause any reaction effect in human beings,

C. Second circuit means connected between the auto transformer output and the earth terminal including an impedance of predetermined value to which the selected test voltage is applied to produce a leakage current therethrough, the AC test leakage current then being the sum of the current through the metering circuit and that through said impedance,

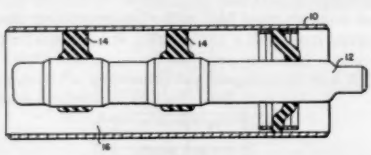
D. Switching means isolating the second circuit means from the auto transformer output whilst the test voltage is being selected and for applying the selected test voltage to the second circuit means when the operation of the current operated core balance protective device is to be checked, and

E. Time control means operative to limit the application of the test leakage current to the supply circuit so that the time-current characteristic of the test leakage current is below the threshold at which dangerous patho-physiological effects are to be expected.

4,135,130
METHOD OF TESTING GAS INSULATED SYSTEMS FOR THE PRESENCE OF CONDUCTING PARTICLES UTILIZING A GAS MIXTURE OF NITROGEN AND SULFUR HEXAFLUORIDE

Roy E. Wootton, Murrysville, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1977, Ser. No. 811,230
Int. Cl.[2] G01R *31/12, 31/00*; C01B *2/00*
U.S. Cl. 324—54 **6 Claims**



1. A method of testing a gas-insulated system for the presence of conducting particles comprising:

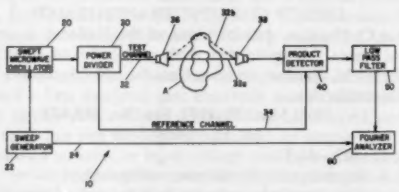
inserting a gaseous mixture comprising about 98 volume percent nitrogen and about 2 volume percent sulfur hexafluoride into said system at a pressure greater than 60 lbs./sq. in. gauge; and

applying a test voltage to said system insufficient to cause break-down of the gaseous mixture in the absence of conducting particles, whereby the presence of conducting particles will be indicated by the breakdown of said gaseous mixture.

4,135,131
MICROWAVE TIME DELAY SPECTROSCOPIC METHODS AND APPARATUS FOR REMOTE INTERROGATION OF BIOLOGICAL TARGETS

Lawrence E. Larsen, Silver Spring, and John H. Jacobi, Bowie, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 14, 1977, Ser. No. 842,137
Int. Cl.[2] G01R *27/04*
U.S. Cl. 324—58.5 A **7 Claims**



1. A method of microwave time delay spectroscopy for remote interrogation of a biological target comprising the steps of:

generating a microwave signal which varies in frequency from a first frequency to a second frequency in a predetermined time period;

dividing said signal into first and second propagation signals;

simultaneously propagating said first propagation signal through a test channel and said second propagation signal through a reference channel, said test channel comprising a transmitting antenna for transmitting said first propagation signal through the target, and a receiving antenna for receiving said first propagation signal transmitted through the target, and said reference channel providing a fixed time delay of propagation therethrough;

detecting and mixing said first and second propagation signals following said propagation thereof to produce a time delay spectrum wherein the frequency of each spectral line represents the instantaneous difference in frequencies of the detected signals.

4,135,132

PASSIVE FILTER COMPENSATION NETWORK

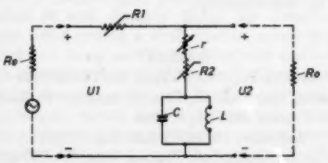
Kjartan Tafjord, Huddinge, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Jan. 31, 1977, Ser. No. 763,902

Claims priority, application Sweden, Feb. 27, 1976, 7602610

Int. Cl.[2] H03H *7/10, 7/14*

U.S. Cl. 333—70 R **5 Claims**



1. A compensation network for a passive LC-filter having a loss attenuation deviating a given value from a determined value dependent on the temperature at a band limit of the filter, said compensating network comprising a four-pole terminal link for connection in cascade with the filter, said link having: a series arm including a first temperature dependent resistor; and a shunt arm including a second temperature dependent resistor and a parallel resonant circuit connected in series, the resonant frequency of said parallel resonant circuit mainly coinciding with the chosen band limit frequency of the filter in order that the operative attenuation of the link at the resonant frequency changes with the temperature and with such an amount which corresponds to the given deviating values of the loss attenuation of the filter.

4,135,133

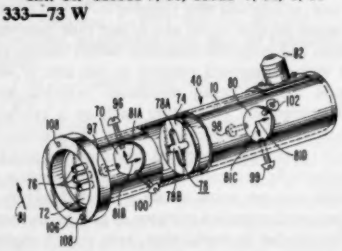
DUAL MODE FILTER

Chuck K. Mok, Pincourt, Canada, assignor to RCA Corporation, New York, N.Y.

Filed May 16, 1977, Ser. No. 797,404

Int. Cl.[2] H03H *9/00;* **H01P** *7/06, 1/00*

U.S. Cl. 333—73 W **8 Claims**



1. A dual mode filter comprising:

a circular waveguide having one end adapted for connection to a signal source;

a first coupling obstacle connected to said one end;

a second coupling obstacle connected within said waveguide between said first coupling obstacle and the other end of said waveguide, thereby forming coaxial input and end cavities between said coupling obstacles and between said second coupling obstacle and said other end, respectively, said cavities being of unequal diameter with lengths of said cavities being substantially equal to one half of a wavelength associated with a center frequency of a pass band of said filter;

an end wall connected to said other end; and

means for coupling a signal from said end cavity;

the diameter of said end cavity being less than that of said input cavity so that the insertion loss of said end cavity is greater than the insertion loss of said input cavity whereby parasitic signals are suppressed only in said end cavity.

4,135,134

ELECTRIC WIRING SWITCH, ESPECIALLY A LINE PROTECTION SWITCH WITH A FAULT-CURRENT CIRCUIT BREAKER

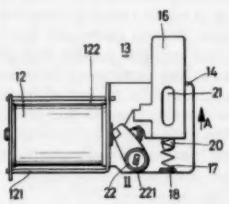
Herbert Ebel, Eppelheim; Rolf Goehle, Leimen, and Volker Schmitt, Bammental, all of Germany, assignors to Brown, Boveri & Cie Aktiengesellschaft, Mannheim-Käfertal, Germany

Filed Apr. 14, 1977, Ser. No. 787,322

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1976, 2616554

Int. Cl.[2] H01H *83/00, 9/20*

U.S. Cl. 335—20 **7 Claims**

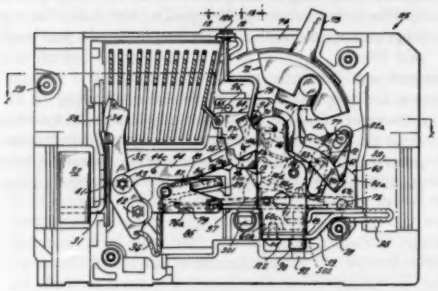


1. Electromagnetic operating current tripping device for connection to an electric wiring switch in a circuit, comprising a magnet armature movable upon the occurrence of a fault current in the circuit, a latching shaft movable into an engaged position by said magnet armature as the magnet armature moves, means disposed on said latching shaft for actuating the switch when said latching shaft is moved, and a push button lastingly indicating the tripping of the tripping device, said push button having projection means and being displaceable between a first "on" spring-loaded position thereof and a second tripped "off" position released from the spring loading, said latching shaft having extension means, said projection means being engageable by said extension means in said "on" position before said latching shaft has been moved into said engaged position by said magnet armature, so as to lock said push button in said "on" position, said extension means being engageable by said projection means in said "off" position after said latching shaft has been moved into said engaged position by said magnet armature, so as to firmly lock said latching shaft in said engaged position.

4,135,135
RESILIENT ANTI-REBOUND LATCH FOR CIRCUIT BREAKER CONTACTS

Tadeusz Rys, Bellefontaine, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 20, 1977, Ser. No. 817,359
Int. Cl.[2] H01H 75/00
U.S. Cl. 335—46 10 Claims



1. A circuit breaker including separable cooperating contact means, a spring powered trip-free mechanism for opening and closing said contact means; said mechanism including a releasable cradle biased toward a tripped position wherein said mechanism is ineffective to close said contact means, and a trip latch for normally maintaining the cradle in a reset position wherein said mechanism is operable to close said contact means; automatic trip means responsive to predetermined abnormal current conditions to trip said trip latch thereby releasing said cradle for movement to a trip position; a housing wherein the circuit breaker elements previously recited are disposed; antirebound latch means including a deflectable means fixedly mounted in said housing and operatively positioned and biased so as normally to be in a first path along which a movable portion of said mechanism moves when said cradle is in said trip position; said deflectable means when in its normal position blocking movement of said movable portion along said first path in contact closing direction; during movement of said movable portion along said first path in contact opening direction said movable portion engaging said deflectable means and deflecting same away from said first path to which the latch automatically returns after the movable portions move past; said cradle when in said reset position repositioning said movable portion so as to move along a second path in contact opening and closing directions, said deflectable means being remote from said second path.

4,135,136
ELECTROMAGNETIC SWITCH MATRIX DEVICE

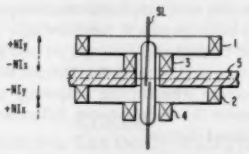
Kazuyoshi Nago; Sadayuki Mitsuhashi, and Tetsuo Yoshino, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 10, 1977, Ser. No. 805,380
Claims priority, application Japan, Jun. 11, 1976, 51-67615
Int. Cl.[2] H01H 67/30
U.S. Cl. 335—112 6 Claims

1. In a electromagnetic switch matrix device of the divisionally excited type comprising:

a plurality of elongated sealed switching means each with two ends, having a magnetic self-holding action such that said switching means conducts only when both ends are in magnetic fields having the same orientation;

a magnetic shunt plate having a top and a bottom with through apertures therebetween, said apertures arranged in rows and columns such that the apertures are located at the cross-points of said rows and columns to allow said switching means to be inserted therein; and first, second, third and fourth windings wound round said switching means so as to generate control magnetic fields for controlling the operations of the respective switching means, said first and third windings being placed on said top side of said magnetic shunt plate and said second and fourth windings being placed on said bottom side of said magnetic shunt plate, said first and second windings being arranged for controlling said switching means in a row and said third and fourth windings being arranged for



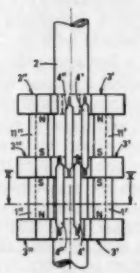
controlling said switching means in a column, wherein the improvement comprises:

a magnetic asymmetry means for giving asymmetrical magnetization to said switching means with respect to the top and bottom plane of said magnetic shunt plate so that the top-side end and the bottomside end of said switching means may have a difference in magnetization when driven by said windings.

4,135,137
MAGNETIC POSITION DETECTORS

Gilbert Thomas, Saint Cloud, France, assignor to Societe Anonyme dite: Petrole Service, France

Filed Mar. 14, 1977, Ser. No. 777,411
Claims priority, application France, Mar. 23, 1976, 76 08403
Int. Cl.[2] G01F 23/00
U.S. Cl. 335—206 5 Claims

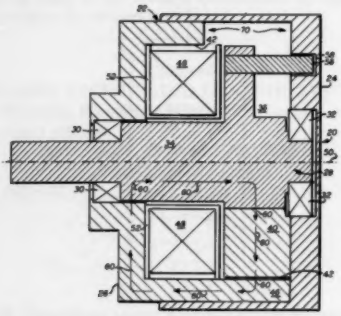


1. A magnetic detection device for detecting the position of a movable member, comprising a piece of magnetic material associated for movement with the movable member inside a tube member of non-magnetic material; a detector unit fixed relative to and outside said tube member including a permanent magnet oriented parallel to the axis of said tube member; a pair of pole pieces and magnetic response switch means, comprising a read switch disposed parallel to the axis of said tube member; said magnet being connected between said pole pieces and operatively contacting each at a contact point thereon, each of said pole pieces having a first section, situated between said contact point and said tube member, and a second section substantially perpendicular to said first section, extending from said contact point in the general direction of said switch means, said extended portions of said pole pieces being substantially parallel to each other, said switch means being positioned facing said extended portions of said pole pieces at a location remote from said permanent magnet.

4,135,138
ROTARY SOLENOID

Richard D. McClintock, Woodbury, Conn., assignor to McClintock Manufacturing Corporation, Palisades Park, N.J.

Filed Jan. 12, 1977, Ser. No. 758,904
Int. Cl.[2] H01F 7/08
U.S. Cl. 335—272 16 Claims



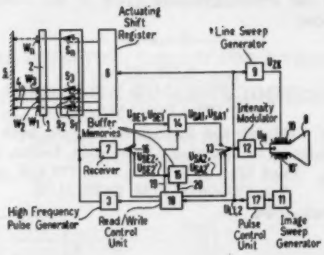
1. A rotary solenoid comprising a housing, a rotor rotatably mounted in said housing, said rotor and said housing being comprised of a magnetically permeable material, a solenoid coil mounted in said housing about the longitudinal axis thereof, said rotor having a shaft portion extending through said solenoid coil along said longitudinal axis and being rotatable within said solenoid coil, said housing having a first pole piece portion therein, said rotor further comprising a first permanent magnet means mounted therein for simultaneous rotation therewith, said first permanent magnet means having first and second null positions with respect to said first pole piece and being mounted in the plane of said first pole piece for rotation about said longitudinal axis in said plane between but not equal to said first permanent magnet means null positions, said first permanent magnet means being mounted in said rotor adjacent said first pole piece in a reverse magnetic flux path from said first permanent magnet means extending through said first pole piece, said housing and said rotor for providing a reverse magnetic flux in said housing and rotor magnetically permeable material, said solenoid coil having an energized state and a deenergized state, said rotor rotating a predetermined angular amount about said longitudinal axis from an initial position in response to a predetermined potential applied to said coil in said energized state, said first permanent magnet means causing said rotor to rotate in a direction opposite to said predetermined direction to return said rotor to said initial position when said applied potential is removed from said coil to place said coil in said deenergized state.

4,135,139
ULTRASONIC IMAGING APPARATUS OPERATING ACCORDING TO THE IMPULSE-ECHO METHOD

Klaus Buchner, Uttenreuth, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 8, 1977, Ser. No. 804,494
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1976, 2628567
Int. Cl.[2] G01S 9/66, 7/62; A61B 10/00
U.S. Cl. 340—1 R 10 Claims

1. Ultrasonic imaging apparatus operating according to the impulse-echo method, intended particularly for medical diagnostics, comprising an ultrasonic applicator for the linear ultrasonic scanning of an examination subject and an image display device with a line generator for reproducing the echo impulses in the form of a line, as well as comprising an image generator for the displacement of the line as a function of the displacement of the ultrasonic beam in the subject, the ultrasonic scanning proceeding in the manner of partial images which are summated into the total image on the display device in an interlaced fashion according to an interlaced procedure, characterized in control circuitry for the line and image generators of the image display device being constructed for the purpose of producing a line deflection raster during each partial image

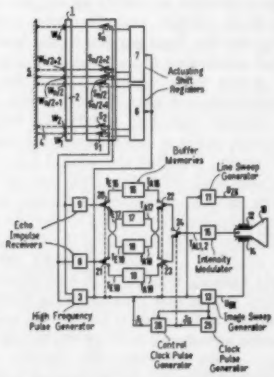


cycle which at least corresponds in its total number of lines to the number of lines of the total image, the control circuitry controlling the display device to display echo impulses only in those lines of the deflection raster which are associated with the lines of a particular partial image of the successively occurring partial images during each partial image cycle.

4,135,140
ULTRASONIC IMAGING APPARATUS OPERATING ACCORDING TO THE IMPULSE-ECHO METHOD

Klaus Buchner, Uttenreuth, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jun. 8, 1977, Ser. No. 804,495
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1976, 2629942
Int. Cl.[2] G01S 9/66, 7/62
U.S. Cl. 340—1 R 8 Claims



1. Ultrasonic imaging apparatus operating according to the impulse echo method, intended particularly for medical diagnostics, comprising an ultrasonic applicator for the linear ultrasonic scanning of an examination subject, and an image display device with a line generator for reproducing the echo pulses as lines and an image generator for the displacement of the line as a function of the displacement of the ultrasonic beam in the subject, characterized in that the ultrasonic applicator has control means constructed for the purpose of a linear ultrasonic scanning of the examination subject simultaneously in a plurality of scan lines during each transmit/receive cycle, lying at specific distances from one another, the allocation of spacing between simultaneously active scan lines in successive transmit/receive cycles being always constant, and buffer

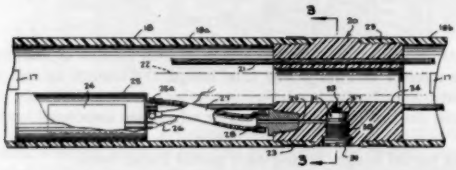
storage means for storing the echo signals of all simultaneously scanned lines and for rapid readout thereof, the control means providing for image line spacings at the display device corresponding to the ultrasonic line spacings in the subject, for the purpose of recording the readout echo signals of the simultaneously scanned lines on the image display device within the period of the transmit/receive cycle of the following line combinations.

4,135,141

MARINE SEISMIC STREAMER WITH DEPTH SENSOR CALIBRATING MEANS

Stephen A. Caldwell, and Randall R. Massey, both of Dallas, Tex., assignors to Whitehall Corporation, Dallas, Tex.

Filed Mar. 1, 1977, Ser. No. 773,413
Int. Cl.[2] G01V *1/38;* B63B *21/56*
U.S. Cl. 340—7 PC **20 Claims**



1. A marine seismic streamer section for a towed underwater seismic streamer of plural serially connected sections containing a hydrophone array and each filled with a buoyancy regulating fill liquid, the streamer section comprising an elongated streamer jacket of generally cylindrical tubular configuration housing the hydrophones and strain cables and signal wires extending therethrough and having end coupling members sealing the ends of the section against loss of fill liquid, a depth sensor located within said jacket for producing electrical signals indicative of the depth of the streamer, a rigid housing within said jacket surrounding said depth sensor, a valve housing body in said section forming a calibrating chamber therein provided with an externally accessible access port and having first and second fluid conduits extending from said chamber, means connecting the first fluid conduit to the interior of said rigid housing and connecting the second fluid conduit to the interior of the jacket to communicate with the fill liquid therein, a removable closure plug for said access port, valve means in said chamber including a movable valve member biased for movement along a valve movement axis to a first normal position placing said first and second fluid conduits in communication with each other for subjecting the interior of said rigid housing and the depth sensor therein to the depth signifying fill liquid pressure conditions in the jacket and having a second calibrating position sealing the second fluid conduit from said chamber and communicating the first fluid conduit and rigid housing interior with said access port, and said valve member in said first position being positioned relative to the access port to be engaged and moved to said second position by a probe introduced through the access port when the plug is removed for subjecting the interior of the rigid housing and depth sensor to gauged calibrating pressures from a source of gauged pressure.

4,135,142

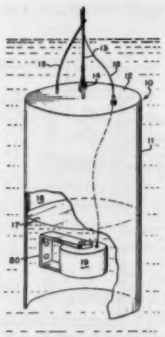
NON-LINEAR ACOUSTIC TRANSDUCER

Joseph L. Percy, and Ludwig R. Duykers, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1977, Ser. No. 822,475
Int. Cl.[2] H04B *13/00*
U.S. Cl. 340—8 R **8 Claims**

1. An apparatus employing a transducer of acoustic energy for projecting and receiving heterodyned signals through a water medium comprising:

means for defining a rigid shell having an open end and a closed end, the defining means being oriented to contain a portion of the water medium near the open end and to trap a predetermined volume of gas defining a resonant chamber directly in contact with the surface of the portion of the water medium and



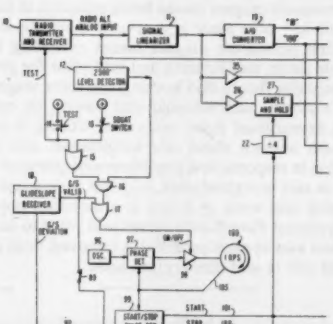
means coupled to the defining means positioning the transducer in the portion of the water medium near the open end for ensuring the hetrodyning of acoustic energy and for efficiently transmitting and receiving sum and difference signals to and from the water medium.

4,135,143

AIRCRAFT ALTITUDE ANNUNCIATOR

Michael A. Argentieri, West Orange, and James G. Lionetti, Northvale, both of N.J., assignors to Intercontinental Dynamics Corporation, Englewood, N.J.

Filed Jun. 14, 1976, Ser. No. 696,032
Int. Cl.[2] G08G *5/00*
U.S. Cl. 340—27 R **61 Claims**



1. A system for use in an aircraft to announce altitude-related messages, said aircraft having means for generating a signal representative of the aircraft altitude, comprising said system means for storing a plurality of verbal messages, at least several of said messages corresponding to and being indicative of respective numerical values of aircraft altitudes, means for playing a selected one of said messages, means responsive to said altitude signal for selecting one of said messages in accordance with the altitude represented by said altitude signal, said message-selecting means selecting one of the numerical-value messages responsive to said altitude signal representing an altitude within a relatively small range which includes the

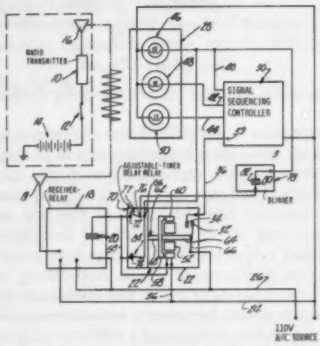
respective numerical value, means for deriving a negative-rate signal representative of a decreasing altitude, and means responsive to the simultaneous deviation of said negative-rate signal and the operation of said message-selecting means for controlling said message-playing means to play the selected message, said message-playing means including means for controlling the play of any numerical-value message at most once for as long as the altitude represented by said altitude signal is within the respective range.

4,135,144

TRAFFIC LIGHT RADIO CONTROL SYSTEM

Edward Elmasian, Bloomfield Hills, Mich., assignor to David L. Kirk, a part interest

Filed Mar. 7, 1977, Ser. No. 774,811
Int. Cl.[2] G08G 1/00
U.S. Cl. 340—32 **3 Claims**



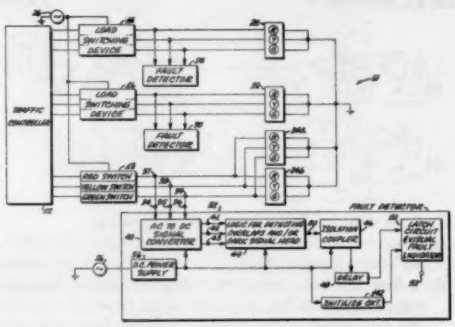
1. In a traffic signal light system of the type including a plurality of traffic lights of different color and including sequencing and timing circuitry and power supply therefor operative to produce energization of said plurality of lights in a predetermined time pattern to thereby regulate traffic flow, the improvement comprising: an emergency vehicle activated controls for said plurality of lights, said controls including first relay means having contacts in series between the power supply means for said sequencing and timing circuitry, said first relay means contacts being normally closed to allow energization of said sequencing and timing circuitry by said power supply, said first relay means further including means disconnecting said sequencing and timing circuitry and said power supply means upon energization of said first relay means and opening of said contacts; radio transmitter means selectively operated and adapted to be carried by an emergency vehicle; radio receiver-relay means adapted to be activated by said radio transmitter means and operative when activated to activate said first relay means to disconnect said power supply means from said sequencing and timing circuitry means by opening of said contacts; delay-relay means having an input terminal means; a first output terminal means adapted to be connected to said input terminal means upon activation of said delay-relay means for a predetermined time period of short duration; second output terminal means adapted to be connected to said delay-relay input means upon disconnection of said first terminal means and continuously activated as long as said delay-relay means is activated; means activating said delay-relay means in response to activation of said receiver-relay means; blinker means including a pair of contacts and adapted to provide a cyclical make and break of said contacts; means connecting said first output terminal means of said delay-relay means to one of said blinker means contacts, the other of said blinker means contacts connected to one of said traffic lights, said second output terminal means connected to one of said traffic lights; means connecting said power supply means to said input terminal means of said delay-relay means upon activation of said receiver-relay means; whereby when said receiver-relay is energized, one of said traffic lights is initially cyclically energized via said blinker means by connection of said power supply via said first output terminal means and then by said connection to said second output terminal means, one of said traffic lights is steadily energized.

4,135,145

ERROR DETECTING CIRCUIT FOR A TRAFFIC CONTROL SYSTEM

Terrence F. Eberle, Scottsdale, Ariz., assignor to Solid State Devices, Inc., Phoenix, Ariz.

Filed Sep. 7, 1976, Ser. No. 720,841
Int. Cl.[2] B60Q 9/00
U.S. Cl. 340—46 **17 Claims**



1. In a traffic control system having a traffic controller, a plurality of load switches connected to and controlled by command signals from the traffic controller, traffic signal lights having different functions, traffic signal lights of a given function controlling the flow of traffic on one street of a plurality of intersecting streets being energizable from a source of AC potential by an energization circuit which includes a load switch, the load switches controlling the traffic signal lights for controlling the flow of traffic on one street constituting a group, the improvements comprising:

(a) a plurality of AC-DC converter circuits, one for each load switch of a given group of load switches;

(b) circuit means for respectively coupling a different AC-DC converter circuit to each energization circuit, each AC-DC converter circuit producing a logic signal having one value when AC potential is applied to it and a second value when no AC potential is applied to it;

(c) a logic circuit to which the logic signals from the AC-DC converter circuits are applied, said logic circuit producing an error signal if two traffic signal lights of a given group having inconsistent functions are energized simultaneously, or if no traffic signal lights of a given group are energized simultaneously;

(d) a time delay circuit;

(e) optical coupling means for applying the error signal produced by the logic circuit to the time delay circuit, said time delay circuit, if the error signal is applied continuously to it for a predetermined period of time, producing an output signal;

(f) circuit means including a silicon controlled rectifier and a photo diode, the photo diode being connected to the anode circuit of the silicon controlled rectifier, the output of the time delay circuit being connected to the gate of the silicon controlled rectifier, said output of the time delay circuit triggering the silicon controlled rectifier into conduction and causing the photo diode to produce visible radiation;

(g) an initializing circuit connected to the anode circuit of the silicon controlled rectifier for maintaining the voltage applied to the anode of the silicon controlled rectifier substantially equal to that of its cathode for a predeter-

mined period of time after power is applied to the traffic control system; and

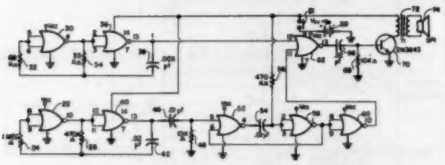
(h) switch means connected to the anode circuit of the silicon controlled rectifier for maintaining the voltage applied to the anode of the silicon controlled rectifier substantially equal to that of its cathode when the switch means is closed.

4,135,146

PORTABLE HANDCLAP GENERATOR

Gerald L. Krupp, El Paso, Tex., assignor to Flora Blameuser, Skokie, Ill.

Filed Aug. 18, 1977, Ser. No. 825,654
Int. Cl.² G08B 3/00
U.S. Cl. 340—384 E **9 Claims**



1. A portable handclap generator comprising:

(a) a source of electrical power operationally connected to the power input terminal of an on-off switching means;

(b) a first oscillator means providing a handclap frequency output signal having its power input terminal operationally connected to the output terminal from the on-off switching means;

(c) a second oscillator means providing an audio frequency output signal having its power input terminal operationally connected to the output terminal from the on-off switching means;

(d) a differentiating circuit means having its signal input terminal operationally connected to the output terminal from the second oscillator means providing a pulsed output signal substantially in proportion to the rate of change of signal from the output terminal of said oscillator means;

(e) a monostable circuit means having its power input terminal operationally connected to the output terminal of said on-off switching means and its signal input operationally connected to the output terminal of said differentiating circuit means having a stable state and providing for triggering by said pulsed output signal from the differentiating circuit means to change that state to a quasi-stable state for a predetermined interval before returning to the original state;

(f) an inverting logic circuit means having its power input terminal operationally connected to the output terminal of said on-off switching means and its signal input operationally connected to the output terminal of said monostable circuit means for providing inversion of the input signal from the output terminal of said monostable circuit means;

(g) a gate logic circuit means having its power input terminal operationally connected to the output terminal of said on-off switching means having a first signal input terminal operationally connected to the signal output terminal from said first oscillator means and a second signal input terminal operationally connected to the signal output terminal from said second oscillator means;

(h) an isolation amplifier means having its power input terminal operationally connected to the output terminal of said on-off switching means and its signal input operationally connected to the output terminal of said logic gate means; and

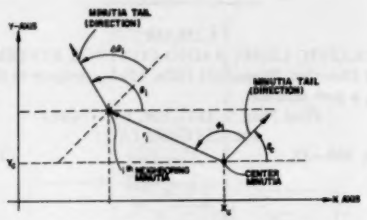
(i) loudspeaker means having signal input terminals operationally connected to signal output terminals of the amplifier means.

4,135,147

MINUTIAE PATTERN MATCHER

John P. Riganati, Yorba Linda, and Visvaldis A. Vitols, Orange, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 10, 1976, Ser. No. 722,308
Int. Cl.² G06K 9/00
U.S. Cl. 340—146.3 E **11 Claims**



1. An automatic minutiae pattern matching system comprising:

means responsive to minutiae of first and second patterns for selectively generating a plurality of sets of neighborhood comparison signals representative of the closeness of match and coordinate and orientation displacements between minutiae neighborhoods of the first and second patterns, each set of neighborhood comparison signals comprising a match score and associated coordinate and orientation displacement signals respectively representative of the closeness of match and coordinate and orientation displacements between a minutiae neighborhood of the first minutiae pattern and a minutiae neighborhood of the second pattern; and

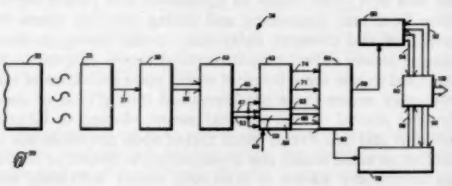
means having a plurality of three-dimensional ranges of different displacements in a three-coordinate system for adding in each three-dimensional range all match scores whose associated sets of displacement signals represent displacements lying within that three-dimensional range in order to find the three-dimensional range having the highest combined match score, the highest combined match score being indicative of the relative closeness of match between the first and second patterns.

4,135,148

CHARACTER PRESENCE DETECTOR

Clifford H. Carlson, Fort Worth, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Jun. 7, 1978, Ser. No. 913,724
Int. Cl.² G06K 9/12
U.S. Cl. 340—146.3 H **23 Claims**



1. A character presence detector for detecting the center of a character within a binary data stream, which is divided into scans, of data bits representing background and character information and passing through a memory capable of storing a plurality of said scans, comprising:

a first logic means connected to said memory for producing first signals when data bits occupying the same position within adjacent scans of said stream contain character information;

a first pattern network responsive to said first signals from said first logic means for signalling when said first signals meet preselected criterion detecting the center of said character across said scans;

a second logic means connected to said memory for producing second signals when adjacent data bits within said data stream contain character information; and

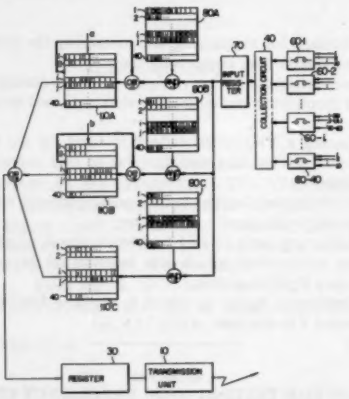
a second pattern network responsive to said second signals from said second logic means for signalling when said second signals meet preselected criterion detecting the center of said character along said scans.

4,135,149

INDICATION INPUT SIGNAL PROCESSING SYSTEM FOR USE IN REMOTE SUPERVISORY CONTROL APPARATUS

Masahiro Takahashi, and Masao Yanaka, both of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Apr. 4, 1977, Ser. No. 784,423
Claims priority, application Japan, Apr. 7, 1976, 51-38218
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—147 R **7 Claims**



1. An indication input signal processing signal for use in a remote supervisory control apparatus of the type which is remotely supervised and controlled from a master station which receives different types of signal transmission to indicate the operating conditions of various equipment, comprising

input means for providing a respective indication input signal representing an operating condition of each of various machines and apparatus provided in a remote controlled station;

first storage means for storing the designated type of signal transmission selectively assigned to each input signal provided by said remote controlled station;

second storage means including a memory circuit for each different type of signal transmission for storing said indication input signals, the indication input signals being stored in respective memory circuits in accordance with the transmission type assigned thereto as indicated by said first storage means;

operational circuit means connected to said input means and said first and second storage means for ANDing said indication input signals with the corresponding designations of said first storage means, and for ORing the data stored in said memory circuits in respective operations; and

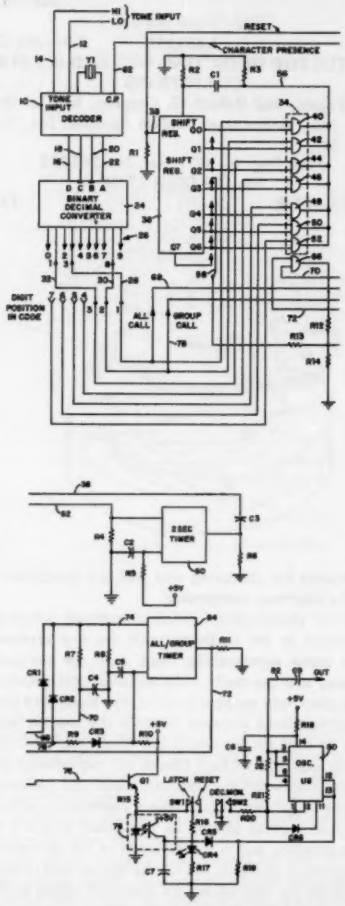
output means for transmitting the data stored in said second storage means in accordance with the assigned signal transmission type thereof.

4,135,150

DECODER CIRCUIT FOR DETECTING SEQUENTIALLY PRESENTED CODE DIGIT SIGNALS

Larry L. Quigley, Piqua, Ohio, assignor to Ledex, Inc., Dayton, Ohio

Filed Aug. 12, 1977, Ser. No. 823,922
Int. Cl.[2] H04Q *9/14*
U.S. Cl. 340—167 R **7 Claims**



1. A decoder circuit for detecting the application of a preselected sequence of digit signals at the circuit input, comprising:

converter means, responsive to the circuit input, for converting each digit signal received at the circuit input to a 1-of-N output on N converter output lines,

digit sequence selection lines, connected to selected ones of said converter output lines in accordance with the preselected sequence of digit signals,

shift register means, having a plurality of register outputs and a shift input, each of said register outputs associated with a respective one of said digit sequence selection lines, for applying an output signal to each of said register outputs in sequence in response to the receipt of shift signals on said shift input,

comparator means, responsive to the outputs of said shift register and to said digit sequence selection lines, for providing an output when a register output and its associated selection line are simultaneously energized,

means for applying outputs from said comparator means to said shift register shift input, and

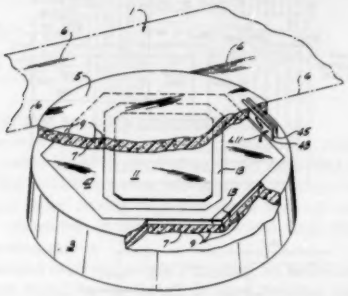
output means responsive to said shift register being shifted a predetermined number of times to provide an output signal indicating receipt of the preselected sequence of digit signals.

4,135,151

APPARATUS FOR DETECTING WET AND ICY SURFACE CONDITIONS

John O. Rogers, and Robert O. Gregory, both of St. Louis County, Mo., assignors to Surface Systems, Inc., St. Louis County, Mo.

Filed Dec. 14, 1977, Ser. No. 860,292
Int. Cl.² G01R 27/26
U.S. Cl. 324—61 R **17 Claims**



1. Apparatus for detecting wet and icy conditions on the surface of a pathway comprising:

a block of electrically insulative material adapted to be embedded in the pathway with the top surface of the block being substantially flush with the surface of the pathway and exposed to atmospheric precipitation;

a sensor electrode encapsulated in said block and positioned a predetermined distance beneath the top surface of the block so that the accumulation of atmospheric precipitation on said top surface affects the capacitance and conductance between said electrode and said pathway;

means for supplying to said sensor electrode a time-varying electrical current having an amplitude which is substantially constant and is independent of the accumulation of atmospheric precipitation on the top surface of said block;

an amplifier for amplifying an electrical signal applied to a pair of input terminals thereof;

means for commonly connecting one input terminal of said amplifier, the time-varying electrical current supplying means, and said pathway in the vicinity of the sensor electrode; means for connecting the sensor electrode to the other input terminal of said amplifier to complete a circuit between the time-varying electrical current supplying means, the sensor electrode and the amplifier thereby to apply an electrical signal to said amplifier, the amplitude of said signal at the input terminals of said amplifier being substantially solely a function of the change in capacitance and conductance between said sensor electrode and said pathway as atmospheric precipitation accumulates on the top surface of said block; and

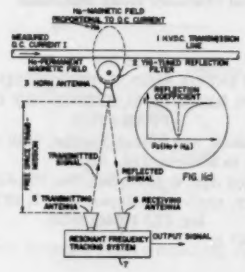
precipitation signal means responsive to the amplitude of an amplified electrical signal from said amplifier reaching a predetermined magnitude for providing an output signal indicative of the presence of atmospheric precipitation on the pathway.

4,135,152

SYSTEM FOR MONITORING AND MEASURING HIGH VOLTAGE D.C. TRANSMISSION LINE CURRENT

Stanislaw S. Stuchly, Ottawa; Michael Z. Tarnawecky, Winnipeg, and Maurice Yunik, Ile des Chenes, all of Canada, assignors to Manitoba Research Council, Winnipeg, Canada

Continuation of Ser. No. 749,048, Dec. 9, 1976, abandoned. This application Aug. 30, 1977, Ser. No. 829,191
Int. Cl.² G01R 19/26, 33/00
U.S. Cl. 324—117 R **8 Claims**



1. A method for monitoring and measuring the current in a d.c. transmission line, comprising the steps:

(i) transmitting a microwave signal v_t from a remote location to a monitoring and measuring station on said transmission line,

(ii) placing a YIG-tuned reflection filter, in the magnetic field H surrounding said line due to said current at said station,

(iii) receiving said microwave signal v_t at said station and applying said signal to said filter,

(iv) reflecting back to said location a signal v_r which contains information which is a function of the centre frequency F_o of the filter,

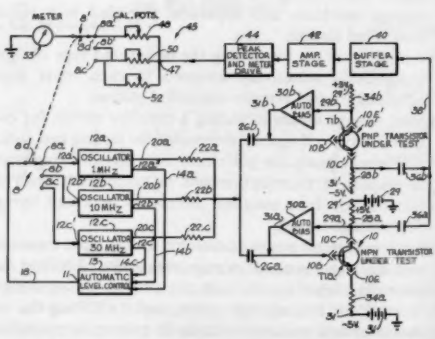
(v) deriving a signal v_o which is a linear function of the current I in the line.

4,135,153

CIRCUIT FOR TESTING HIGH FREQUENCY CURRENT AMPLIFYING CAPABILITY OF BIPOLAR TRANSISTORS

Dennis C. Stone, Roselle, Ill., assignor to Dynascan Corporation, Chicago, Ill.

Filed Apr. 29, 1977, Ser. No. 792,134
Int. Cl.² G01R 31/22
U.S. Cl. 324—158 T **18 Claims**



1. A transistor test circuit for testing the high frequency current amplifying capability of bipolar transistors having widely varying current gains and cut-off frequencies, said

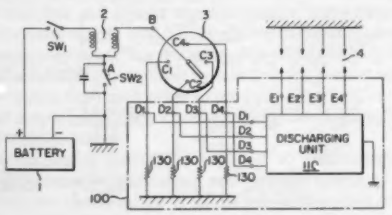
circuit comprising: emitter, collector and base connecting terminals to which the emitter, collector and base terminals of the transistors under test are respectively to be connected, means providing at a test signal input terminal a sinusoidal test frequency signal which has a frequency much greater than the assumed normal cut-off frequency of the transistors to be tested, a source of DC energizing voltage, test circuit means coupled between said source of DC energizing voltage and said emitter and collector connecting terminals and between said test signal input terminal and said emitter and base connecting terminals for producing an amplifier circuit which linearly amplifies the test frequency signal when the base circuit of the transistor under test is properly biased, said test circuit means including an automatic bias level control circuit connected between said emitter and base connecting terminals and responsive to the DC collector current of the transistor under test to automatically adjust the base drive current of the transistor under test to provide a substantially fixed predetermined DC collector current effecting linear amplification of said test frequency signal, and means for providing an indication of the product of the test frequency signal and the amplitude of the AC component of the collector current of the transistor under test.

4,135,154

CRT DISPLAY OF CONDITION IN CYLINDERS OF INTERNAL COMBUSTION ENGINE

Toshiaki Ogura, Cyofu; Toshio Saito, Matsudo; Hideo Higashi, Takatsuki, and Yoshimichi Yamazaki, Settsu, all of Japan, assignors to Banzai, Ltd., Tokyo, Japan

Filed Apr. 8, 1977, Ser. No. 786,054
Claims priority, application Japan, Apr. 9, 1976, 51-40070
Int. Cl.[2] G01R *13/42*
U.S. Cl. 324—16 S **2 Claims**



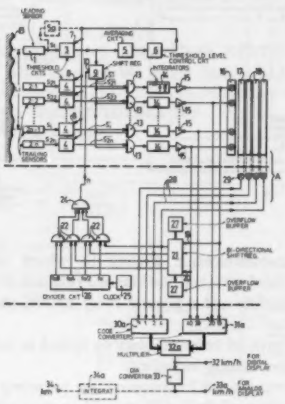
1. An apparatus for inspecting an electric ignition type engine comprising timing pulse forming circuits connected to the segments of the distributor of the engine for forming timing pulses from the secondary voltages of the ignition coil distributed by the distributor, a high frequency pulse source, boosting transformers each having a high voltage coil and a low voltage coil, said each high voltage coil being connected across the corresponding spark plug, switching elements each connected through the low voltage coil of the corresponding boosting transformer across said pulse source and adapted to be made conductive to allow the voltage from said pulse source to be applied to the corresponding spark plug so as to establish multi-electric discharges in the spark plug in response to the timing pulse from the corresponding one of the timing pulse forming circuits and to be made non-conductive to stop the voltage from being applied to said corresponding spark plug in response to the timing pulse from the timing pulse forming circuits next to said corresponding one, and means connected to the spark plugs for displaying said electric discharge waves.

4,135,155

SYSTEM AND METHOD FOR DETERMINING VEHICLE GROUND SPEED

Albin Kehl, Stuttgart; Hans-Georg Muller, Ditzingen, and Friedrich Scharf, Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 12, 1977, Ser. No. 832,570
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1976, 2643524
Int. Cl.[2] G01P *3/66*
U.S. Cl. 324—178 **22 Claims**



1. Method to determine the relative speed between a first body (A) and a second body (B) in which a plurality of sensing means (1, 2.1 . . . 2.n) are secured to one of said bodies (A) and located thereon, staggered by fixed distances in the direction of relative movement of said bodies, and responsive to a characteristic of said other body (B);

in which sensed characteristic signals are derived from each said sensing means, said sensed signals being time-shifted with respect to each other in accordance with the distance (L) of said sensing means from each other,

and comprising, in accordance with the invention, the steps of

generating a first sensed characteristic signal (s_1) from a sensing means located at the leading portion of said one body (A);

generating a plurality of second sensed characteristic signals ($s_{2.1} \ldots 2_{2.n}$) which are time shifted with respect to each other from said sensing means located at portions of said body trailing respect to said leading portion;

time-delaying said first sensed characteristic signal to obtain a delay signal (s_1);

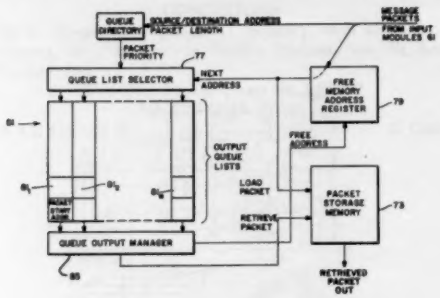
simultaneously comparing said time delayed signal (s_1) with each of said generated characteristic signals ($s_{2.1} \ldots s_{2.n}$) and obtaining an output signal representative of optiimal correlation between said compaired signals;

and utilizing said correlation output signal to provide an indication representative of relative speed of said bodies (A, B).

4,135,156
SATELLITE COMMUNICATIONS SYSTEM INCORPORATING GROUND RELAY STATION THROUGH WHICH MESSAGES BETWEEN TERMINAL STATIONS ARE ROUTED

Royden C. Sanders, Jr., Wilton, N.H.; Martin R. Richmond, Lexington, Mass., and Alfred J. Cann, Wilton, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Jun. 20, 1974, Ser. No. 481,015
Int. Cl.[2] H04B 7/20
U.S. Cl. 325—4 26 Claims



1. A communication system in which communications among ground terminal stations are relayed through an earth-orbiting satellite and a ground relay station, said system comprising

a set of ground terminal stations linked to subscribers, each terminal station including

(1) a transmitter for transmitting outgoing messages independent of control from said ground relay station,

(2) a receiver for receiving incoming messages,

an orbiting satellite relay including means for relaying earthward transmissions from the ground stations in the system, said ground relay station including

(1) means for receiving the message transmissions from said terminal stations relayed by said satellite relay, and

(2) means for processing the received messages according to message destination and retransmitting them to said satellite relay, whereby all messages transmitted from each terminal station are relayed by the satellite relay to the ground relay station and then relayed from the ground relay station through the satellite relay to the terminal stations connected to the subscribers who are to receive the messages.

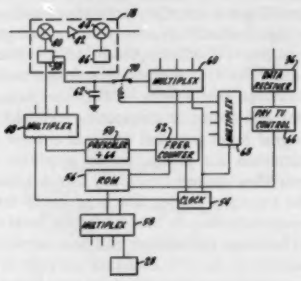
4,135,157
POLE MOUNTED CONVERTER

Pieter den Toonder, Dordrecht, Netherlands, assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Mar. 28, 1977, Ser. No. 781,533
Int. Cl.[2] H04N 7/16
U.S. Cl. 325—308 12 Claims

4. Cable television converter means including an input, a plurality of individual converter RF sections, each including an oscillator and a mixer, each mixer being connected to said input and to its associated oscillator,

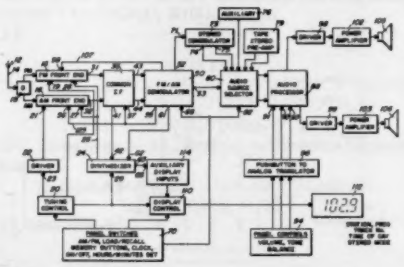
a plurality of subscriber channel selection means, common oscillator tuning means arranged for connection to each oscillator and each subscriber selection means, said common oscillator tuning means sequentially and repetitively being connected to each oscillator and its associated selection means, and providing oscillator tuning control during the period of each such connection.



4,135,158
UNIVERSAL AUTOMOTIVE ELECTRONIC RADIO

Bernard S. Parmet, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1975, Ser. No. 583,343
Int. Cl.[2] H04B 1/06
U.S. Cl. 325—317 57 Claims



1. An electronic radio comprising

a plurality of input RF front ends, including at least one AM front end and one FM front end, each front end including an RF filter tunable over a desired band to pass selected signals to its output,

band switching means for selecting a desired front end output,

means frequency variable to translate each selected front end output to a common predetermined intermediate frequency, which common intermediate frequency is selected to be substantially higher than the frequency of the AM front end signals;

means tuning the front ends and the translator,

means amplifying and filtering the intermediate frequency signal,

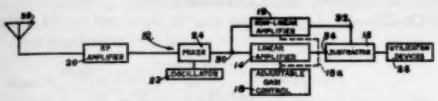
means demodulating the signal from the intermediate frequency amplifying and filtering means, and

audio reproducing means amplifying the demodulated output and transducing the resultant signal to audibility.

4,135,159
APPARATUS FOR SUPPRESSING A STRONG ELECTRICAL SIGNAL

Jacob H. Kubanoff, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation of Ser. No. 665,146, Mar. 8, 1976, abandoned. This application Jun. 24, 1977, Ser. No. 809,821
Int. Cl.[2] H04B 1/10
U.S. Cl. 325—476 4 Claims



1. Apparatus for suppressing unwanted strong electromagnetic signals and amplifying weak electromagnetic information signals of substantially the same frequency which comprises:

first means for detecting, amplifying and heterodyning all of said electromagnetic signals;

said first means comprising circuit means which includes an antenna, radio-frequency amplifier, mixer and oscillator circuits;

first amplifier means having a input electrically connected to an output of said first means for simultaneously, non-linearly amplfiying all of said electromagnetic signals from said output of said first means;

second amplifier means electrically connected in common to said output of said first means and to an input of said first amplifier means for simultaneously linearly amplifying all of said electromagnetic signals from said output of said first means;

gain control means for simultaneously regulating the gain of said first and second amplifier means to control the amplitude of said unwanted strong electromagnetic signals so that the outputs of said first and second amplifier means for said strong signals are equal;

subtractor circuit means electrically coupled to the outputs of said first and second amplifier means for subtracting said strong signals of equal amplitude from each other to cause cancellation therebetween, and for subtracting from said weak signals amplified by said first and second amplifier means from each other to produce a resultant output, said output comprising a predominantly linearly amplified information signal;

utilization means electrically coupled to said subtractor circuit means for monitoring said resultant output of said subtractor circuit means to adjust said gain control means to maximize the signal strength of said weak information signals thereby isolating said weak signals from said strong signals.

4,135,160
PULSE WIDTH NORMALIZER

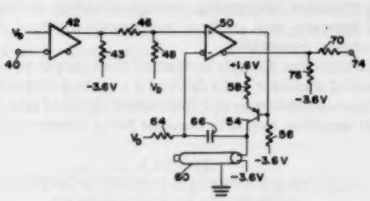
Laurence O. Gagliani, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 27, 1977, Ser. No. 801,179
Int. Cl.[2] H03K 1/18
U.S. Cl. 328—58 3 Claims

1. A pulse width normalizer circuit, comprising:

a differential amplifier having a signal input for receiving input pulses, a reference input, and a pair of outputs; and

circuit means coupled to said amplifier for latching said amplifier for a predetermined time period after receipt of an input pulse, said circuit means including a delay line having one end thereof coupled to said reference input, the other end of said delay line being shorted so that signals propagating therealong are reflected, said circuit

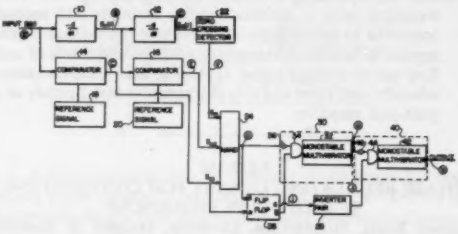


means further including means for coupling one of said outputs to said reference input and to said delay line.

4,135,161
METHOD AND MEANS FOR PULSE DETECTION

Don J. Torrieri, 3104 Cordoba St., Silver Spring, Md. 20904

Filed May 31, 1977, Ser. No. 801,942
Int. Cl.[2] H03K 5/153
U.S. Cl. 328—108 7 Claims



1. A method of detecting pulses, comprising the steps of:

applying an input signal to a first differentiating means and a first comparing means;

differentiating said input signal and transmitting a first differentiated signal to a second differentiating means and a second comparing means;

comparing said input signal and said first differentiated signal to different predetermined reference signals and obtaining an output from each comparing means whenever said input signal and said first differentiated signal is greater than its respective reference signals;

differentiating said first differentiated signal and obtaining a second differentiated signal;

generating a zero-crossing signal whenever said second differentiated signal crosses zero;

generating a logic output whenever said zero-crossing, first differentiated and second differentiated signals occur simultaneously; and

utilizing said logic output to trigger an output signal associated in time with said input signal.

4,135,162
POWER AMPLIFIER CIRCUITS

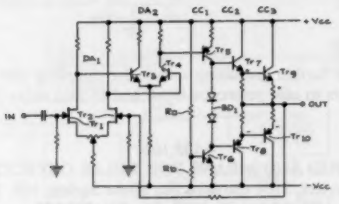
Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Oct. 11, 1977, Ser. No. 840,600
Claims priority, application Japan, Oct. 12, 1976, 51/122149
Int. Cl.[2] H03F 3/45
U.S. Cl. 330—255 5 Claims

1. In a power amplifier circuit including a differential amplifier having a pair of first and second transistors connected between positive and negative power lines, a complementary symmetry circuit having a pair of third and fourth transistors of opposite conductive type connected between said positive and negative power lines, with said third transistor directly

connected to an output point of said first transistor thereby to drive said third transistor directly by a first output voltage signal of said differential amplifier, and a bias circuit for said fourth transistor comprising voltage dividing resistors connected between said positive and negative power lines, an improvement comprising,

a fifth transistor directly connected to an output point of said second transistor to be driven by a second output signal in phase opposition to said first output signal of said differential amplifier, said fifth transitor being connected between



said voltage dividing resistros in series therewith to phase-invert said second output signal and to couple said second output signal with said fourth transistor, and

means for equalizing a current flowing through said fifth transistor with a current flowing through said second transistor to equalize the amplitude of the voltage signal applied to said fourth transistor with the amplitude of said first output voltage signal applied to said third transistor whereby said third and fourth transistors may operate as a push-pull amplifier.

4,135,163
PHASE REGULATING CIRCUIT FOR CONTROLLING SPACED PULSE SEQUENCES

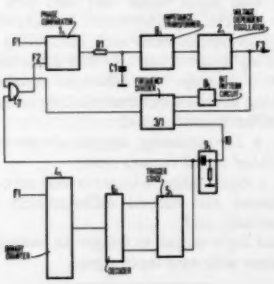
Helmut Kosel, Holzkirchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 31, 1977, Ser. No. 847,211

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1977, 2716813

Int. Cl.² H03B 3/04

U.S. Cl. 331—1 A **8 Claims**



1. A phase regulating circuit for producing timing pulses in conjunction with a displacement pick-up supplying synchronizing pulses for constantly synchronizing the phase regulating circuit, said circuit comprising a phase comparator having an input to which such synchronizing pulses are supplied, a voltage-dependent generator having an input operatively connected to the output of said comparator, and a frequency divider, having an input connected to receive output timing pulses from said generator, and having an output connected to another input of said phase comparator for supplying output pulses thereto, and switching means for interrupting the supply of output pulses from the frequency divider to the comparator, in the event of interruption of synchronizing pulses from such a displacement pick-up, and which upon recurrence of synchronizing pulses therefrom reestablishes the supply of pulses from the frequency divider to the comparator.

4,135,164
SYNCHRONOUS GENERATING CIRCUIT DEVICES WITH TWO PHASE-LOCKED LOOPS AND FEEDBACK AROUND BOTH

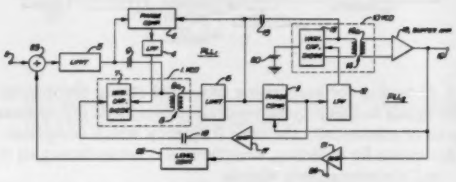
Hirotaka Kurata, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1977, Ser. No. 857,979

Claims priority, application Japan, Dec. 10, 1976, 51/147840

Int. Cl.² H03B 3/04

U.S. Cl. 331—2 **11 Claims**



1. A circuit device for generating a synchronous signal in synchronism with a steady wave component of a signal having the steady wave component and at least one phase variation component, comprising:

an input terminal to which the signal is applied;

a first phase-locked loop including a first voltage controlled oscillator (VCO) means, a first phase comparator means for phase comparing the input signal with an output of said first VCO means, and a first low-pass-filter for obtaining a control signal from an output of said first phase comparator means to control the output frequency of said first VCO means;

a second phase-locked loop including a second voltage controlled oscillator (VCO) means, a second phase comparator means for phase comparing the output of said first VCO means with an output of said second VCO means, and a second low-pass-filter for obtaining a control signal from an output of said second phase comparator means to control the output frequency of said second VCO means;

a first feedback means for feeding back an AC component of the output of said second phase comparator means to said first VCO means to suppress the generation of said AC component;

and a second feedback means for feeding back the output of said second VCO means to said input terminal to be added to the input signal, whereby said synchronous signal is obtained from the output of said second VCO means.

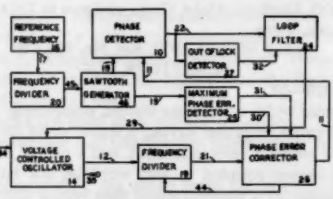
4,135,165
PHASE-LOCKED LOOP OSCILLATOR

Thomas F. Coe, 4631 Murphy Ave., San Diego, Calif. 92122

Division of Ser. No. 757,112, Jan. 5, 1977, Pat. No. 4,034,310. This application Jun. 30, 1977, Ser. No. 812,018

Int. Cl.² H03B 3/04

U.S. Cl. 331—11 **3 Claims**



1. In a phase-locked circuit where the frequency of a first

signal is automatically and continuously adjusted in response to the output of a phase detector which measures the phase error between the first signal and a second reference signal, a device for detecting when the circuit is in an out-of-lock condition which comprises:

means for detecting when said phase error exceeds at least one pre-determined limit;

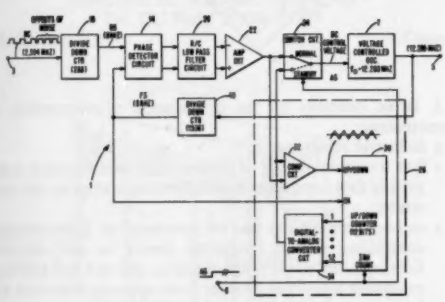
means, responsive to said means for detecting, for shifting the phase of one of the signals in relation to its source by an amount sufficient to return said phase error within said limit before applying it to the phase detector; and means responsive to the output of the phase detector for signaling when the level of said output signal exceeds at least one predetermined limit.

4,135,166

MASTER TIMING GENERATOR

Charles R. Marchetti, Wellesley, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 26, 1978, Ser. No. 899,922
Int. Cl.[2] H03B 3/04
U.S. Cl. 331—14 **6 Claims**



1. A master timing generator operable to produce an output signal synchronized with an input clock signal and to maintain synchronization during periods that the input clock signal is affected by noise, said master timing generator comprising:

voltage controlled oscillator means adapted to receive input control voltages at an input thereof and operative in response to each said input control voltage to produce a corresponding output signal of a frequency determined by said voltage;

phase lock loop circuit means adapted to receive an input clock signal and the output signals produced by the voltage controlled oscillator means and operative to detect the phase displacement between the input clock signal and each said output signal and to produce a control voltage indicative of said phase displacement;

switch circuit means coupled to the phase lock loop circuit means and to the voltage controlled oscillator means and operative in the absence of noise affecting the clock signal to couple each control voltage produced by the phase lock loop circuit means to the input of the voltage controlled oscillator means for causing the voltage controlled oscillator means to produce a corresponding output signal;

standby means coupled to the phase lock loop circuit means and to the switch circuit means and operative to receive each control voltage produced by the phase lock loop circuit means and to establish therefrom a corresponding standby control voltage; and

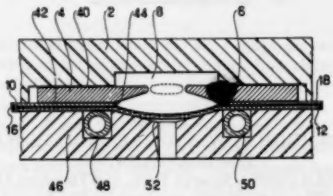
said switch circuit means being further operative to receive an alarm signal when the input clock signal is affected by noise and in response thereto to uncouple the phase lock loop circuit means from the voltage controlled oscillator means and to couple the then existing standby control voltage established by the standby means just prior to the occurrence of the alarm signal to the input of the voltage controlled oscillator means to cause the voltage controlled oscillator means to produce a corresponding output signal for the duration that the switch circuit means receives the alarm signal.

4,135,167

LASER HAVING A BRIEF DISCHARGE BETWEEN TWO ELONGATED ELECTRODES

Bruno Godard, Gif sur Yvette, France, assignor to Compagnie Generale d'Electricite S.A., Paris, France

Continuation of Ser. No. 686,434, May 14, 1976, abandoned.
This application Mar. 29, 1978, Ser. No. 891,250
Claims priority, application France, May 30, 1975, 75 17034; Mar. 31, 1976, 76 09394
Int. Cl.[2] H01S 3/097
U.S. Cl. 331—94.5 PE **7 Claims**



1. A brief discharge laser comprising an enclosure for containing a gas capable of amplifying light when excited by an electric discharge, two parallel elongated electrodes disposed in the enclosure and having adjacent faces which form two sides of an elongated laser channel running from a first end to a second end, electric means for so generating a brief discharge across the faces of the electrodes that, in operation, a light wave appearing at the first end of the channel and propagating towards the second end is amplified as it passes through the excited gas and leaves the enclosure through a suitably placed window in the enclosure, and a convergent optical system placed in the path of light leaving the second end of the channel and having a focus substantially coinciding with the first end of the channel; the cross-sectional shape of said adjacent faces of each of the electrodes in a plane perpendicular to the channel being that of a rounded-off point directed towards the other electrode whereby any light propagating obliquely along the channel and being reflected from either electrode is reflected outside the channel and therefore ceases to be amplified during operation of the laser; wherein the sides of said rounded-off point are substantially plane, and are joined by an arc forming the end of the point which arc is between 120° and 170°.

4,135,168

REVERSE CHANNEL GaAsFET OSCILLATOR

Paul C. Wade, Somerville, N.J., assignor to Microwave Semiconductor Corporation, Somerset, N.J.

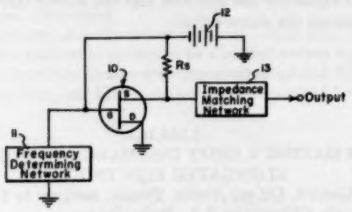
Filed Feb. 2, 1978, Ser. No. 874,703
Int. Cl.[2] H03B 5/00
U.S. Cl. 331—108 R **4 Claims**

1. A high frequency power oscillator comprising:

a gallium arsenide field effect transistor having a source, a gate and a drain; a source bonding pad; a gate bonding pad; and, disposed between said source and gate bonding pads, one or more drain bonding pads;

a conductive pedestal for contacting said one or more drain bonding pads in a flip-chip mounting arrangement;

frequency determining means; and



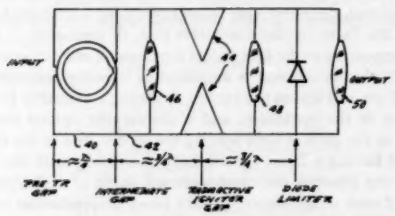
conductive means for interconnecting said source, gate and drain in a common-drain oscillator configuration.

4,135,169

PRE-TR HIGH POWER/INTERMEDIATE POWER STAGE APPARATUS

James F. McLaughlin, Severna Park, and Theodore M. Nelson, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 10, 1977, Ser. No. 776,390
Int. Cl.[2] H01P 1/14
U.S. Cl. 333—13 **4 Claims**



1. A pre-TR high power/intermediate power stage apparatus for receiver protectors comprising in combination:

a quartz cylinder having a longitudinal groove in its inner surface, said quartz cylinder being sealed at both ends, said quartz cylinder containing a halogen gas at a predetermined pressure, said quartz cylinder having a predetermined diameter, and

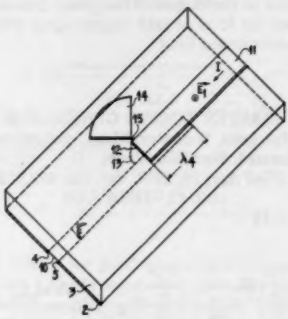
a means for mounting said quartz cylinder, said mounting means substantially surrounding said quartz cylinder, said mounting means having a first and second slot, therein, positioned diametrically opposite each other on said quartz cylinder, said first slot being larger than said second slot, said second slot being adjacent to said longitudinal groove in said quartz cylinder, said first and second slot being parallel to each other and to the longitudinal axis of said quartz cylinder, said first and second slot being in a same plane with said longitudinal groove in said quartz cylinder, said mounting means being connected to and in front of a receiver waveguide protector means, said mounting means having the same outside dimension as said receiver waveguide protector means, said quartz cylinder having its outside diameter equal in size to the inside dimension of said mounting means.

4,135,170

JUNCTION BETWEEN TWO MICROWAVE TRANSMISSION LINES OF DIFFERENT FIELD STRUCTURES

Michel Baril, and Jacques Legendre, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Apr. 28, 1977, Ser. No. 792,042
Claims priority, application France, Apr. 30, 1976, 76 12998
Int. Cl.[2] H01P 5/10
U.S. Cl. 333—26 **9 Claims**



1. In an assembly for the propagation of microwaves, in combination:

a dielectric substrate;

a first transmission line of symmetrical field structure comprising first conductor means forming a strip on said substrate;

a second transmission line of asymmetrical field structure comprising second conductor means on said substrate forming a slot paralleling said strip, said slot and said strip extending toward each other from opposite directions and having overlapping terminal portions; and

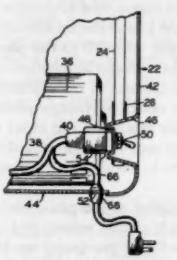
supplemental conductor means on said substrate establishing a virtual short-circuit between said terminal portions, along lateral edges thereof, at least for microwaves propagated thereover.

4,135,171

CEMENT MIXER WITH SWITCH HARNESS

Jon A. Violet, Fredricktown, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Jun. 2, 1977, Ser. No. 802,737
Int. Cl.[2] B28C 5/18; H01H 9/02
U.S. Cl. 366—60 **9 Claims**



1. In combination, a cement mixer having a mixing drum, a housing mounted on a supporting frame of said cement mixer, an electric motor within said housing for driving said mixing drum, said motor having a cord and male plug, a switch harness in said housing, said switch harness including a main body of cast material having a female outlet molded therein for

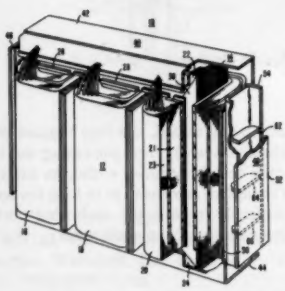
receiving the motor plug, said main body also having a recess molded therein, a switch unit received in said body recess, said switch unit having a switch with terminals electrically connected with said outlet through conductors molded into said body, said switch unit having a handle extending outside said housing to enable an operator to turn on and shut off said switch from outside said housing, and a second cord and a second plug extending from said body out of said housing and electrically connected with terminals of said switch through other conductors molded into said body.

4,135,172

ELECTRICAL INDUCTIVE APPARATUS

Jerry W. Grimes, Danville, Va., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 31, 1977, Ser. No. 846,942
Int. Cl.[2] H01F *27/26, 27/30*
U.S. Cl. 336—197 7 Claims



1. Electrical inductive apparatus comprising:

a magnetic core having at least first and second vertically extending leg portions of substantially rectangular cross-sectional configuration connected by upper and lower yokes, said leg and yoke portions being formed of a plurality of laminations of magnetic material;

first and second electrical winding assemblies axially disposed in inductive relation with said first and second leg portions of said magnetic core, respectively, said first and second electrical winding assemblies each having a substantially rectangular cross-sectional configuration and being subject to radial forces incident to a short circuit;

an upper end frame disposed to clamp said upper yoke of said magnetic core;

a lower end frame disposed to clamp said lower yoke of said magnetic core; and

first and second vertically extending end plates disposed in registry with said first and second electrical winding assemblies, respectively, and connected at their top and bottom ends to opposing ends of said upper and lower end frames to form a solid support structure for said magnetic core and said electrical winding assemblies;

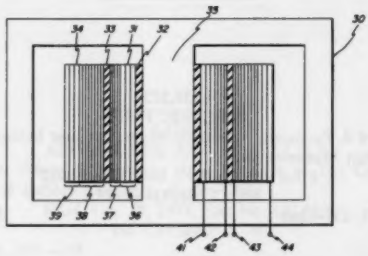
said first and second end plates having a substantially tubular cross-sectional configuration formed of first and second leg portions and first and second end portions that provides a strong and lightweight support structure that resists movement of said electrical winding assemblies due to said radial forces incident to a short circuit.

4,135,173

LOW VOLUME SHEET-WOUND TRANSFORMER COILS WITH UNIFORM TEMPERATURE DISTRIBUTION

Sanborn F. Philp, Pittsfield, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 686,289, May 14, 1976, abandoned. This application May 16, 1977, Ser. No. 797,306
Int. Cl.[2] H01F *27/28*
U.S. Cl. 336—220 6 Claims



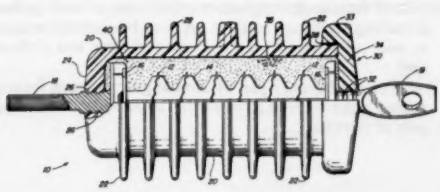
1. An electrical transformer having a magnetic core, a first winding adapted to be connected across first circuit means, said first winding comprising an insulated, conductive sheet wound continuously in a plurality of turns about the core, each adjacent turn of said first winding being of a first thickness within a first predetermined radial distance from said core and a second thickness smaller than said first thickness, beyond said first predetermined radial distance from said core, and a second winding adapted to be connected across second circuit means, said second winding comprising an insulated, conductive sheet wound continuously in a plurality of turns about said first insulated, conductive sheet, each adjacent turn of said second winding being of a third thickness within a second predetermined radial distance from said core and being of a fourth thickness larger than said third thickness beyond said second predetermined radial distance from said core.

4,135,174

CURRENT LIMITING FUSE CONSTRUCTION

Bruce A. Biller, Chicago, Ill., assignor to S&C Electric Company, Chicago, Ill.

Continuation of Ser. No. 708,146, Jul. 23, 1976, abandoned. This application Jul. 22, 1977, Ser. No. 817,985
Int. Cl.[2] H01H *85/20*
U.S. Cl. 337—186 25 Claims



1. In a high voltage fuse including a current responsive fusible element, and first and second conductive terminals respectively electrically connected to opposite ends of the fusible element; an improvement comprising:

a molded hollow fuse body surrounding the fusible element, said fuse body having exterior surface elongating means integrally molded thereto;

end sealing means for closing at least one open end of said fuse body comprising:

a molded end cap formed of rigid resin material having the first conductive terminal mounted therethrough, and

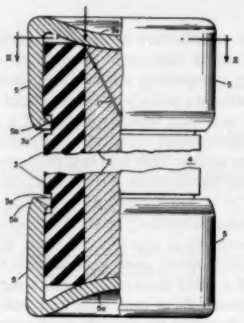
rigidly supported thereby said end cap having a rigid end wall portion for closing the at least one open end and a flange portion at the edge of the end wall portion, said flange dimensioned to mate with the end of said fuse body so that said flange can be attached to said fuse body by adhesive.

4,135,175

ELECTRIC FUSE

Richard J. Perreault, Amesbury, Mass., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Aug. 4, 1977, Ser. No. 819,062
Int. Cl.[2] H01H *85/16*
U.S. Cl. 337—248 **2 Claims**



2. An electric fuse including
(a) a tubular casing of electric insulating material having a pair of rims at the ends thereof;
(b) a fusible element inside said casing having ends bent around said pair of rims to the outside of said casing and having an intermediate portion slanting through the space defined by said casing;
(c) a pulverulent arc-quenching filler inside said casing embedding a portion of said fusible element;
(d) a pair of ferrules mounted on the ends of said casing and conductively interconnected by said fusible element, said pair of ferrules having substantially convex end surfaces imparting resiliency to them so as to be movable relative to said casing due to the resiliency of their end surfaces; and
(e) said casing having a pair of annular grooves each forming a fixed point receiving the axially inner end of one of said pair of ferrules.

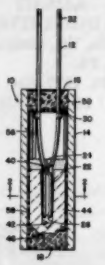
4,135,176

THERMAL SWITCH AND METHOD OF MAKING

John K. McVey, Chicago; Bruce A. Luxon, Bensenville, and Larry L. Sharp, Schaumburg, all of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 21, 1977, Ser. No. 844,414
Int. Cl.[2] H01H *37/76*
U.S. Cl. 337—404 **12 Claims**

1. A thermal switch device comprising a pair of conductive wire members each including a switch region and a lead region at opposing extremities thereof, the switch regions arranged to generally oppose each other and including localized contact points electrically interconnecting one wire member to the other, a preformed, substantially nonconductive heat-fusible pellet arranged in surrounding engagement with at least a part of the switch region, a first spring means formed in one of said switch regions reacting against an inner peripheral surface of the heat-fusible pellet resiliently forcing the localized contact points together, a second spring means formed in at least one of said wire members intermediate the lead and switch region thereof providing stored energy biasing the switch regions away from each other when they are held in contact by the heat-fusible pellet, a tubular casing of electrically insulating material surrounding the heat fusible pellet and at least the switch regions of the conductive wire members, the outer periphery of the heat-fusible pellet rigidly, circumferentially supported by the inner periphery of the casing, both extremities of the casing being sealed, the lead regions of each wire member extending outwardly from the casing and including an anchoring portion fixedly secured within an extremity of the casing with an insulative cement so as to load the second spring means and electrically insulate the anchoring portions of the conductive wire members from each other.



4,135,177

THERMAL PROTECTIVE SWITCH

John R. Kelley, and Harold G. Wyse, both of 3629 N. Dixie Dr., Dayton, Ohio 45414

Filed May 2, 1977, Ser. No. 792,530
Int. Cl.[2] H01H *37/76*
U.S. Cl. 337—407 **13 Claims**

1. A thermal switch comprising a housing, a set of elongated conductors having corresponding inner portions disposed within said housing, said inner portions of said conductors having corresponding center axes defining a plane, a contact element disposed within said housing and extending from said inner portion of one said conductor to said inner portion of the other said conductor, said contact element having a contact portion engaging said inner portion of one said conductor at a location spaced from the plane when said contact element is in a conducting position, a thermal sensing element disposed within said housing for normally retaining said contact element in said conducting position, said thermal sensing element being capable of changing from a rigid state to a melted state in response to being heated to a predetermined temperature, means associated with said contact element for urging said contact element from said conducting position to a spaced interrupted position in response to changing of said thermal sensing element to said melted state, and said contact portion passes between said inner portions and transversely through the plane when moving from said conducting position to said interrupted position to effect snap-action movement of said contact element.

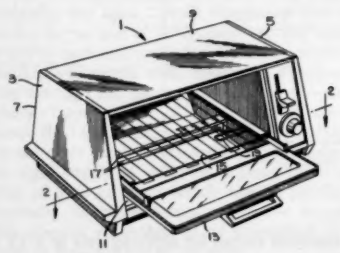
Patent Not Issued For This Number

4,135,179

ELECTRICAL TEMPERATURE SENSING DEVICE

Paul V. Snyder, Whitehall, Pa., assignor to General Electric Company, Bridgeport, Conn.

Filed Jun. 1, 1977, Ser. No. 802,423
Int. Cl.[2] H01C *7/02*
U.S. Cl. 338—28 **7 Claims**



1. A temperature sensing device comprising:
(a) a central elongated core of low mass insulating material,
(b) a helical wire of temperature sensitive wound about said core,
(c) a thin-walled sleeve of electrical insulating material fitted over the wire-wound core so as to have a gap of less than 0.005 between said sleeve and the helical wire, and
(d) a thin-walled tubing of material exhibiting good thermal and mechanical properties fitting over said insulating sleeve so as to provide a gap of less than 0.005 between said tubing and sleeve.

4,135,180

AFTERMIXER AND APPARATUS

John R. White, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Aug. 15, 1977, Ser. No. 824,365
Int. Cl.[2] B01F *5/06*
U.S. Cl. 366—336 **2 Claims**

1. An aftermixer for use in line with an impingement mixer to achieve improved mixing of a molding composition as it moves to a shaper, comprising an aftermixer member having an inlet opening connected by cavities therein to a series of outlet openings to permit the molding composition to move through the aftermixer to the shaper, said inlet opening of said mixer being connected to at least three outward radiating elongated hollow cavities that terminates in an enlarged accumulation chamber, each of said outward radiating elongated cavities having an interconnecting cavity positioned between them at a point past midpoint of distance from the inlet opening to the enlarged accumulation chamber, each interconnecting cavity having an elongated hollow cavity projecting outward therefrom to an outlet opening.

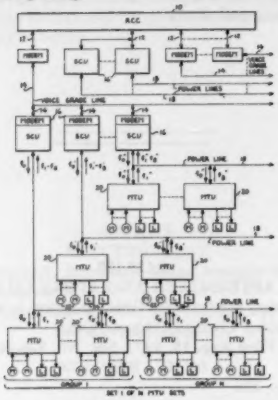
4,135,181

AUTOMATIC REMOTE METER READING AND CONTROL SYSTEM

Anthony P. Bogacki, Chester, N.H.; Richard G. Farnsworth, York, Me.; Samuel G. Hardy; Paul B. Robinson, both of Durham, N.H., and Charles A. Stutt, Rexford, N.Y., assignors to General Electric Company, Somersworth, N.H.

Filed Jan. 30, 1976, Ser. No. 653,859
Int. Cl.[2] H04B *3/54*
U.S. Cl. 340—310 A **14 Claims**

12. A remote automatic utility meter reading system for reading the measurement of commodities over a plurality of power lines comprising:



(a) a computer for transmitting commands of first, second, and third types and receiving measurement data, each of said commands having first and second address portions and a function code portion;

(b) a plurality of individually addressable control units, each interconnecting said computer with an associated power line, each of said control units including,

(1) address recognition means responsive to the contents of the first address portion of said commands to effect the transfer of those commands, including said first and second address and function code portions, from said computer to that control unit's associated power line which contains an address recognized by said address recognition means.

(2) a receiver section responsive to the contents of the function code portion of a command of said second type to enable said receiver section to simultaneously receive coded signals representative of said measurement data, said receiver section including,

(i) a plurality of receivers, each including means for receiving and storing coded signals of a different frequency, and

(ii) means for transferring the stored coded signals from said control unit to said computer; and

(c) a plurality of transponder units coupled to the power line of each control unit, the transponder units on each power line forming a group capable of recognizing an address unique to each group and the transponder units in each group operable to be simultaneously responsive to a command received from their respectively coupled control unit to effect the transmission of coded signals over their respective power line at a different frequency forming one frequency of a specified range of frequencies assigned to each group of transponder units, each transponder unit including,

(1) a meter including an encoder, said encoder generating data signals representative of a commodity reading measured by said meter,

(2) a plurality of function code identifiable storage means,

(3) a plurality of load control means for controlling a load associated respectively therewith, and

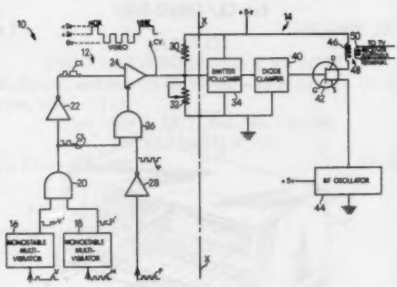
(4) decode means responsive to the commands transmitted by said computer to effect the carrying out of functions in said transponder unit as specified by the function code portion of said commands when said decode means recognizes the address of said transponder unit's associated control unit as specified by the contents of the first address portion and further recognizes an address assigned to each of the transponder units in a group as specified by the contents of the second address portion of said commands, said decode means, in response to a command of said first type, selectively effecting the storage of the signals representative of a commodity reading from said encoder, as said measurement data, into an identified one of said storage means as specified by the function code portion of the command of said first type, and in response to the contents of the function code portion of a command of said second type, effecting the transfer of the measurement data from a one of the storage means as identified by the function code portion of the command of said second type, the measurement data being simultaneously transferred from the addressed group of transponder units to said computer via that group's associated control unit, and further in response to the contents of the function code portion of a command of said third type, selectively activating a one of said load control means to effect control of that load control means load as specified by the function code portion of the command of said third type whereby the selected loads of the addressed group of transponder units are simultaneously activated.

4,135,182

CIRCUIT FOR APPLYING ALPHA/NUMERIC DATA TO A TV RECEIVER

Wayne D. Bell, Bountiful, and Earl T. Hansen, Taylorsville, both of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jun. 17, 1977, Ser. No. 807,765
Int. Cl.[2] G06F *3/14*
U.S. Cl. 358—141 **10 Claims**



1. An electrical circuit for applying data to a TV receiver, comprising:

a shaping and mixing circuit portion for producing a composite signal from data-bearing video pulses and horizontal and vertical sync pulses, said shaping and mixing circuit portion including

means for respectively responding to incoming digital horizontal and vertical sync pulses and shaping the same to widths required for utilization by said TV receiver,

a tri-state gate,

logic means interconnecting said shaping means and said tri-state gate and responding to incoming video pulses

for feeding said sync and video pulses in a desired sequential arrangement to said tri-state gate, and

pull-up and pull-down resistors operatively associated with said tri-state gate such that together said gate and resistors function to combine said horizontal and vertical sync pulses and video pulses into said composite thereof and establish three voltage levels of sync and video signal portions within said composite signal; and

a modulating circuit portion including

an oscillator for generating a RF carrier signal,

a field-effect transistor (FET) coupled to said oscillator for modulating the RF carrier signal, and

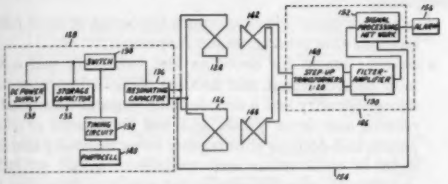
means for feeding said composite signal to said FET for producing amplitude modulation of said carrier signal by said FET and transmission of said modulated signal to said TV receiver.

4,135,183

ANTIPILFERAGE SYSTEM UTILIZING "FIGURE-8" SHAPED FIELD PRODUCING AND DETECTOR COILS

Eugene C. Heltemes, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed May 24, 1977, Ser. No. 799,976
Int. Cl.² G08B *13/24*
U.S. Cl. 340—572 **19 Claims**



1. In a system for detecting the passage of objects through an interrogation zone in which means are provided for establishing an alternating magnetic field in the zone and adjacent to which a magnetic field detector is provided for detecting perturbations in the field as may be caused by the presence of a ferromagnetic marker element secured to the objects, the improvement wherein

the magnetic field providing means comprises at least a pair of coils, each of which is substantially planar and is positioned on an opposite side of the interrogation zone such that the planes of the coils are parallel to each other and to a corridor defined therebetween, each of the coils being of substantially the same overall dimensions and having a shape similar to one of a "figure-8" or an "hour-glass", each half of each coil consisting of a substantially triangular section symmetric with respect to a horizontal axis passing through the plane of the coil at the crossing or "necked-in" portion thereof, whereby the direction of the magnetic field components in the corridor produced between the coils when connected to an alternating circuit varies significantly in different regions to increase the number of lines of force which will be parallel with a substantially unidimensionally responsive ferromagnetic marker element regardless of its orientation to thereby enhance its detectability in the zone.

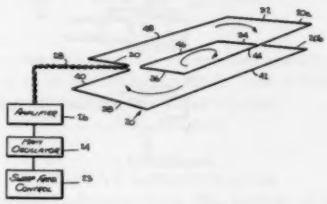
4,135,184

ELECTRONIC THEFT DETECTION SYSTEM FOR MONITORING WIDE PASSAGEWAYS

Ronald Pruzick, Commack, N.Y., assignor to Knogo Corporation, Hicksville, N.Y.

Filed Aug. 31, 1977, Ser. No. 829,346
Int. Cl.² G08B *13/24*
U.S. Cl. 340—572 **14 Claims**

1. An electronic theft detection system for detecting the unauthorized passage of articles through an interrogation zone at a passageway leading from a protected area, said system comprising signal transmitter means, including a transmitting antenna, for generating electromagnetic interrogation signals of predetermined frequency at said interrogation zone, electrical target circuits tuned to resonate at said predetermined frequency and attached to articles in said protected area and receiver means, including a receiver antenna, for detecting the electromagnetic effects produced by the resonating of said target circuits when they pass through said interrogation zone, said transmitter antenna and said receiver antenna lying in flat, horizontal planes in substantial alignment with each other, with one of said antennas positioned on the floor of said passageway at said interrogation zone and the other antenna positioned overhead above said one antenna so that a person who walks through said interrogation zone passes between said antennas, each antenna comprising a plurality of conductors connected together in series to form a closed circuit with said transmitter means and sad receiver means, respectively, a first group of the conductors of each antenna extending along said interrogation zone and a second group of the conductors of each antenna extending crossways of said interrogation zone, the conductors of each group being spaced apart and staggered with respect to each other so that different conductors of each group extend over different portions of the distance crossways of and along said interrogation zone.

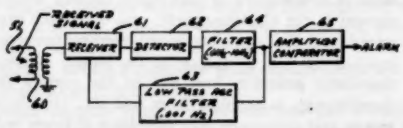


4,135,185

RF LOOP INTRUDER DETECTION SYSTEM

Walter Rotman, Brighton; J. Leon Poirier, Chelmsford; Nicholas V. Karas, Lowell; Peter R. Franchi, Winchester, and Ronald L. Fante, Reading, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 7, 1977, Ser. No. 840,355
Int. Cl.² G08B *13/18*
U.S. Cl. 340—552 **4 Claims**



1. An RF loop intruder detection system being comprised of two approximately concentric loops of wire surrounding a resource to be protected against human intrusion, said two concentric loops of wire spaced apart a predetermined magnitude, a transmitter feeding RF energy to one of said concentric loops of wire, indication means receiving RF energy from the other of said concentric loops of wire resulting from an elec-

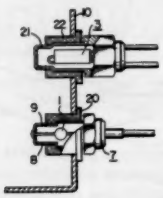
tromagnetic field between said loops, and means connected to said indicating means for tripping an alarm upon predetermined change in the level of the received energy, as would be produced by said human intrusion.

4,135,186

LIQUID LEVEL DETECTING APPARATUS

Hitoshi Minorikawa, Mito; Yukio Hohsho, Hiroshima, and Sadayasu Ueno, Katsuta, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 23, 1977, Ser. No. 771,177
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—622 **7 Claims**



1. An apparatus for detecting a liquid level comprising:

(a) a thermistor having a negative temperature coefficient of resistance;

(b) an electromagnetic coil having a positive temperature coefficient of resistance;

(c) connecting means for connecting said thermistor and said electromagnetic coil in series to each other;

(d) means for supplying d.c. current to the series connection composed of said thermistor and said electromagnetic coil;

(e) a container for accommodating therein a liquid, the level of which is to be detected;

(f) first mounting means for fixedly mounting said thermistor to said container at a predetermined level to detect the level of said liquid;

(g) second mounting means for fixedly mounting said electromagnetic coil on said container in a manner so that temperature of said liquid may be conducted to said electromagnetic coil; and

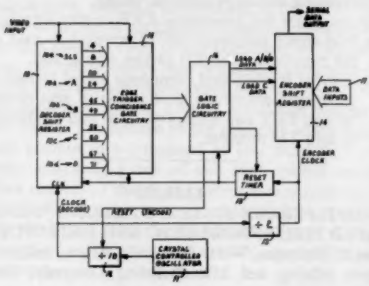
(h) means for detecting current flowing through said thermistor and indicating whether the level of said liquid is at a normal level or not, said means for detecting including the electromagnetic coil and a contact actuated by said electromagnetic coil, connected to provide a bypass circuit for said thermistor when the current flowing in said electromagnetic coil reaches a predetermined level, said electromagnetic coil having a variable range of internal resistance which varies to compensate for variations in current flowing through said thermistor brought about by variations in temperature of said liquid thereby holding the current in the electromagnetic coil below the predetermined level until a predetermined overheat temperature is reached by said thermistor in the liquid; wherein said thermistor generates heat due to the current flowing therethrough as supplied from said d.c. current supply means, said thermistor thus exhibiting different temperatures in the states immersed in said liquid and exposed to air thereby to vary the resistance thereof in dependence upon whether said thermistor is positioned above or below said liquid level, said variations in resistance changing the current flowing through the thermistor and the coil to increase the current in the coil to the predetermined level of current to actuate the coil when the thermistor is above said liquid.

4,135,187

TRANSPONDER DECODER/ENCODER CIRCUITRY

Milan Borota, Jr., Olathe, Kans., assignor to King Radio Corporation, Olathe, Kans.

Filed May 20, 1976, Ser. No. 688,181
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.8 LC **10 Claims**



1. In a transponder adapted to receive a coded interrogation signal having a plurality of input pulses, the improvement comprising:

single clock means for producing a first series of clock pulses having a first predetermined frequency;

a decoder means for decoding and validating said coded interrogation signal, said decoder means comprising validating circuitry and a decoder shift register connected to receive said input pulses and said first series of clock pulses, said decoder shift register being driven by said first series of clock pulses and operable with said validating circuitry to correlate said input pulses to determine the validity of said interrogation signal, said decoder means being operable to produce a validation signal in response to a determination that said interrogation signal is valid;

means for providing a reply signal in response to said validation signal;

means for deriving a second series of clock pulses from said first series of clock pulse said second series of clock pulses having the frequency different from the frequency of said first series of clock pulses;

means for encoding said reply signal, said encoding means comprising an encoder shift register connected to receive said reply signal and said second series of clock pulses, said second series of clock pulses being operable to drive said encoder shift register to produce a coded reply signal in response to an interrogation signal that is valid; and

synchronizing means for establishing a set time delay between production of said validation signal and production of said coded reply signal.

4,135,188

METHOD AND APPARATUS FOR ORALLY ANNOUNCING VEHICLE SPEED

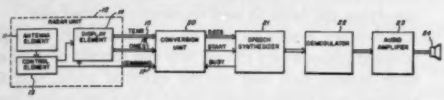
Edgar B. Bickley, Jr., 55 N. River Rd., Apt. #10E, Manchester, N.H. 03105; Thomas H. Harrison, 10101 D. Lake Front Cir., Tampa, Fla. 33612, and Ronald K. Haigh, 16 King Richard Dr., Londonderry, N.H. 03053

Filed Aug. 31, 1977, Ser. No. 829,533
Int. Cl.[2] G01S 9/44
U.S. Cl. 343—8 **7 Claims**

1. Apparatus for producing an oral announcement of the speed of the vehicle including:

A. measuring means for generating a control signal and concurrent first and second parallel speed signals that correspond to first and second speed digits representing vehicle speed in response to a radar measurement of the vehicle speed,

B. conversion means connected to said measuring means for generating audio information signals containing audio information in response to the control and the first and second speed signals,

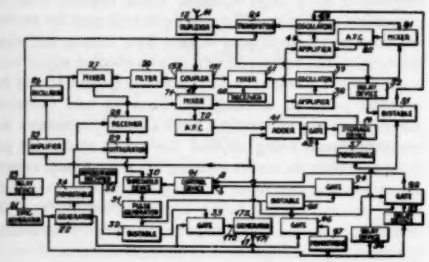


C. transducer means connected to said conversion means for generating an oral announcement of vehicle speed in response to the audio information signals.

4,135,189
RANDOM FREQUENCY RADAR SYSTEM

Paul Josse, Paris, France, assignor to Compagnie Generale de Telegraphie Sans Fil, France

Filed Jan. 4, 1965, Ser. No. 424,171
Claims priority, application France, Jan. 9, 1964, 64.959768
Int. Cl.[2] G01S 7/36
U.S. Cl. 343—18 E **8 Claims**



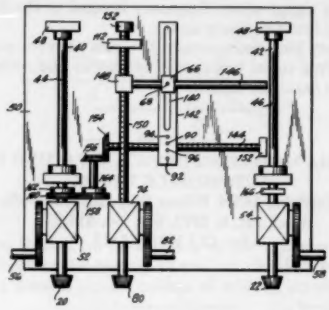
1. A variable frequency pulse radar system comprising:
a transmitter, a receiver and means for initiating successive radar transmission-reception cycles at successive frequencies; listening means for picking up, while one of said radar cycles is running at a given carrier frequency, signals on the air at various frequencies different from the actual radar cycle frequency; means for selecting one of said frequencies; and means for tuning said radar transmitter and said radar receiver during the next radar cycle to said one selected frequency.

4,135,190
NAVIGATIONAL PLOTTER

Paul DiMatteo, Huntington; Joseph A. Ross, Fort Salonga, and John P. Whiteman, Seaford, all of N.Y., assignors to Solid Photography Inc., Melville, N.Y.

Filed Sep. 29, 1976, Ser. No. 727,637
Int. Cl.[2] G01S 1/30; G08B 5/22; G01D 9/00
U.S. Cl. 434—105 R **13 Claims**

1. A plotter comprising, in combination, a frame; a chart movable in predetermined directions; means for movably supporting said chart; means on said chart for recording intersections of predetermined spaced lines with a common line; means cooperating with said recording means for reading said recorded intersections; spool means for winding said chart thereon; said spool means comprising two spools spaced from each other; means for transporting said chart between said spools; and means for maintaining said chart taut while being transported between said spools and comprising means freely rotatable on one of said spools and carrying the portion of the chart wound on said one spool, spring means with one end connected to said one spool and with the other end connected to said means freely rotatable on said one spool, said spring means being free of connection to said frame, said freely rotatable means being connected to said one spool through said spring means, and means linking said two spools so that when

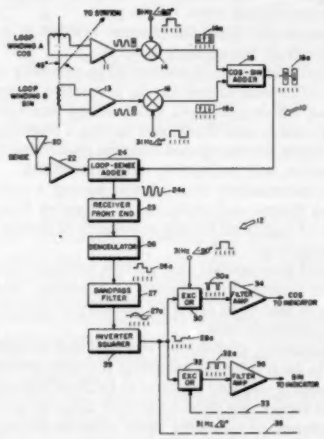


one spool is rotated through a predetermined amount of rotation the other spool is rotated directly by said linking means through said predetermined amount of rotation.

4,135,191
COHERENT DEMODULATOR

Joseph J. Sawicki, Lighthouse Point, Fla., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 13, 1977, Ser. No. 805,676
Int. Cl.[2] G01S 3/20
U.S. Cl. 343—121 **6 Claims**



1. Means for demodulating a first frequency signal so as to recover phase modulation information impressed thereon, including a phase locked loop comprising:
a frequency detector responsive to said first frequency signal and a second frequency signal for generating an error signal, said frequency detector being a type II phase comparator having a relatively wide capture range but relatively loose lock characteristics;
a phase detector responsive to said first and second frequency signals for generating said error signal, said phase detector being a type I phase comparator having a relatively narrow capture range but relatively tight lock characteristics;
switch means responsive to the locked state of said phase locked loop for selecting said frequency detector to generate said error signal during the period said phase locked loop is unlocked and for selecting said phase detector to

generate said error signal when said phase locked loop is locked;

voltage controlled oscillator means responsive to said error signal as applied thereto for generating said second frequency signal whose frequency is equal to the frequency of said first frequency signal; and,

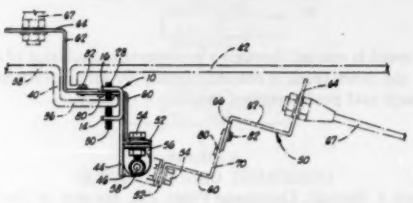
a relatively long time constant low pass filter for processing said error signal before it is applied to said voltage controlled oscillator means.

4,135,192

ANTENNA MOUNTING DEVICE ATTACHED TO AN AUTOMOBILE TRUNK

Alfred P. Parduhn, 14501 Wilson Rd., Edmond, Okla. 73034

Filed Jul. 8, 1977, Ser. No. 814,032
Int. Cl.² H01Q *1/32*
U.S. Cl. 343—715 **3 Claims**



1. A device for mounting an antenna upon the perimeter of an automobile trunk opening comprising:

a channel bracket of C-shaped cross-sectional configuration having an opening therein for engaging a flange surrounding an automobile trunk opening;

an ear projecting from the channel bracket in a direction opposite from the opening therein;

an angulated antenna-supporting strap pivotally connected at one of its ends to said ear for pivotation between a first location within said trunk and a second location predominantly outside said trunk, and having a plurality of right-angle bends therein spaced from the ends thereof and from each other, said supporting strap comprising:

a first intermediate step portion having a right angular bend therein and including an adjusting flange on one side of said bend having a plurality of spaced apertures therethrough; and

a second intermediate step portion having a right angular bend therein and including an adjusting flange on one side of said bend having a plurality of spaced apertures therethrough; and

means adjustably connecting said first and second step portions to each other by extension through selected aligned apertures in said step portions to facilitate spacing the ends of said supporting strap from each other to accommodate the antenna to mounting upon vehicles having different trunk flange widths.

4,135,193

DIRECTIONAL DUPLEXER

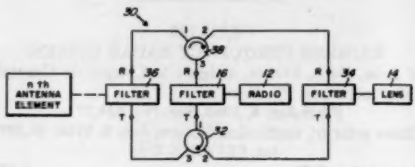
Richard S. Kommrusch, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 1, 1977, Ser. No. 820,667
Int. Cl.² H01Q *3/26*
U.S. Cl. 343—854 **11 Claims**

8. In an omnidirectional scanning array including a cumulator means having N ports for receiving and transmitting radio signals respectively, N-antenna elements each coupled to a respective one of said N ports of said cumulator means, the improvement including switching means coupled between each N antenna element and N port of the cumulator means and comprising N directional duplexers, each duplexer comprising:

filter means having first, secnd and third ports, said third port thereof being coupled to a transceiver means, said filter means being responsive to a transmit signal applied thereto from said transceiver means for steering the same to said second port thereof, said filter means being responsive to a receive signal applied at said first port thereof for supplying the same to said transceiver means; and

signal steering means having an output and an input port coupled respectively to said first and second ports of said filter means, first and second external ports, said first external port thereof being coupled to a respective one of the N ports of the antenna element, said second external port being coupled to a respective one of the N ports of the cumulator means, said signal steering means being



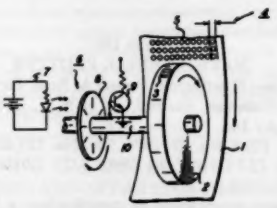
responsive to a receive signal being applied from the cumulator means at said second external port for steering the same to said first port of said filter means, said signal steering means being responsive to a receive signal being applied from a respective N antenna element at said first external port for steering the same to said cumulator means, said signal steering means being responsive to a transmit signal being applied thereto at said input port from said filter means for steering the same to said cumulator means, and said signal steering means being responsive to a transmit signal being applied thereto from said cumulator means at said second external port for steering the same to said respective N antenna element.

4,135,194

ROTARY HEAD MAGNETIC RECORDING AT FIXED WAVELENGTH WITH VARYING SPEEDS

Thomas M. Frey, Brighton, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 3, 1976, Ser. No. 747,285
Int. Cl.² G03G *19/00*
U.S. Cl. 346—74.1 **1 Claim**



1. In magnetic imaging apparatus of the type wherein latent magnetic images are composed with magnetic pixel elements recorded on a magnetizable member at a given spatial frequency along generally parallel tracks in response to image data signals representative of the pixel elements applied to a drive circuit of a rotating, magnetic writing head whose rotational speed effects the spatial frequency of the pixel elements and wherein the rotating writing head and magnetizable member are supported for relative movement to construct the parallel tracks,

the improvement being apparatus for maintaining constant the spatial frequency of the recorded pixel elements de-

spite variations in the rotational speed of the rotating writing head comprising

encoder means coupled to the rotating writing head to generate a first signal having a frequency directly proportional to the rotational speed thereof and

logic AND gate means for combining said first and image data signals to generate a third signal having the same frequency as the first signal coupled to the drive circuit for the writing head whereby the resultant recorded pixel elements have a constant spatial frequency.

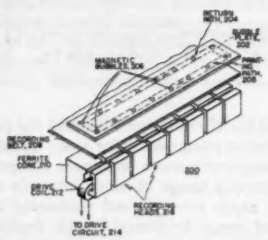
4,135,195
MAGNETOGRAPHIC PRINTING APPARATUS

Ernst F. R. A. Schloemann, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 673,224, Apr. 2, 1976, abandoned. This application Apr. 18, 1977, Ser. No. 788,191

Int. Cl.[2] G03G *19/00*; G11B *15/00*

U.S. Cl. 346—74.1 **22 Claims**



1. In combination:

a recording medium;

a medium for providing a plurality of moveable cylindrical magnetic domains localized within said medium adjacent a surface of said recording medium;

means for propagating said magnetic domains parallel to said surface of said recording medium;

means for producing at least first and second values of a magnetic field in response to an electrical current, said magnetic field from said magnetic field producing means interacting with the magnetic field of said magnetic domains to magnetize said recording medium in the region of said recording medium adjacent said magnetic domains for said first value and not magnetizing said recording medium for said second value;

means for producing said current to activate said magnetic field producing means to magnetize said recording medium in predetermined character image patterns; and

means for supplying magnetic toner particles to the magnetized recording medium.

4,135,196
GROOVED CHARGING ELECTRODE IN AN INK JET SYSTEM PRINTER

Fumio Siozaki, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 21, 1977, Ser. No. 835,207

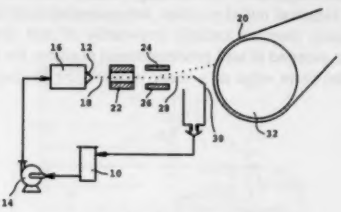
Claims priority, application Japan, Sep. 22, 1976, 51/128209; Sep. 27, 1976, 51/130160

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **16 Claims**

1. In combination with an ink jet system printer which emits charged ink droplets from a nozzle toward a record receiving member through the use of a charging means, and selectively deflects said ink droplets by deflection means and records desired symbols on said record receiving member with said selectively deflected ink droplets, said charging means comprising:

a charging electrode having a surface confronting the passage of said ink droplets; and



grooves formed on said surface of the charging electrode confronting the passage of said ink droplets, said surface being parallel to said passage of said ink droplets.

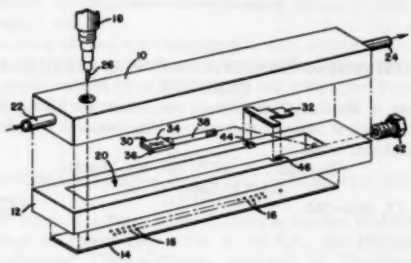
4,135,197
VIBRATION DAMPING MEANS FOR INK JET PRINTING DEVICE

Leonard G. Stoneburner, Fairborn, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Oct. 14, 1977, Ser. No. 842,300

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **6 Claims**



1. In an ink jet printing device having a printing head with an elongated orifice plate containing a plurality of orifices along its length and a stimulation means for generating high frequency traveling wave vibration longitudinally of the orifice plate, the improvement comprising:

damping means disposed remote from said stimulation means along said orifice plate and having an adjustably positionable rigid contact member in engagement with the surface of said orifice plate for engaging said orifice plate at a position such that reflected vibrations from an end of said orifice plate will be substantially damped.

4,135,198
SHEET CLAMP APPARATUS

Sakae Fujimoto, Chofu, Japan, assignor to Ricoh Co., Ltd., Japan

Filed Jun. 13, 1977, Ser. No. 806,066

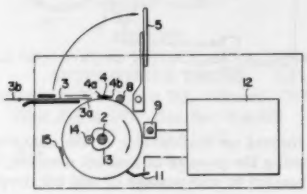
Claims priority, application Japan, Sep. 18, 1976, 51/125904; Jun. 28, 1976, 51/76231; Jul. 27, 1976, 51/89299; Jul. 27, 1976, 51/89300; Jul. 30, 1976, 51/91458; Aug. 3, 1976, 51/92469; Aug. 3, 1976, 51/92470; Sep. 10, 1976, 51/108631

Int. Cl.[2] G01D *15/28*

U.S. Cl. 346—138 **10 Claims**

1. A sheet clamp apparatus comprising, in combination: a drum around which a sheet is to be wound, said drum having a recess, at one part of its peripheral surface, extending along a generating line of said peripheral surface; a single clamp member conformably engageable in said recess substantially flush with said peripheral surface and movable radially outwardly of said drum, said single clamp member having leading

and trailing edges; means biasing said clamp member to seat in said recess; stopping means operable to stop said drum at a predetermined position so that single clamp member is always set at an identical initial position; means operable to move said single clamp member radially outwardly of said drum, with said drum stopped at said predetermined position, for introduction of the front edge of a sheet beneath the trailing edge of



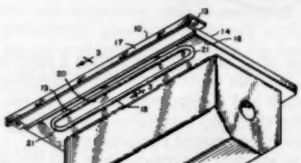
said single clamp member for clamping of the front edge of the sheet for wrapping of the sheet around said drum upon rotation of said drum; and means operable, immediately before said drum finishes one revolution following insertion of the front edge of the sheet beneath the trailing edge of said clamping member, the engage the rear edge of the sheet beneath the leading edge of said single clamping member for clamping of the sheet to the peripheral surface of said drum.

4,135,199

STIFFENING CONSTRUCTION FOR FACSIMILE CASSETTE

Jeffrey B. Kurland, Framingham, and Albert W. Miller, Westboro, both of Mass., assignors to Alden Research Foundation, Brockton, Mass.

Filed Mar. 30, 1977, Ser. No. 783,042
Int. Cl.[2] G03G 17/02
U.S. Cl. 346—165 **8 Claims**



1. A cassette for a facsimile recorder including a scanning electrode for marking a web drawn from the cassette, the cassette comprising:

a housing for holding a supply of recording web including a web holding supply compartment and two opposed lips of sheet material extending outwardly from said web holding supply compartment and forming a web exit path from the compartment,

the lips being connected to each other at each side of the exit path, and

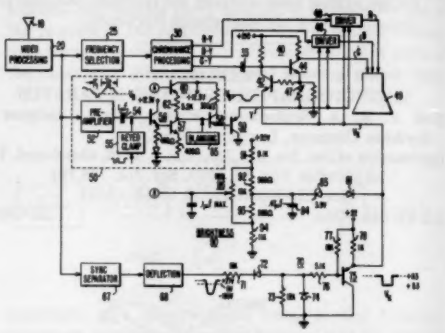
a ridge formed on at least one lip, said ridge being disposed on said lip intermediate the supply compartment and the exit and extending across the web path so as to urge said one lip toward the other lip and press against the web therebetween, whereby said lip is strengthened and back tension is applied to the recording web and the cassette is sealed against the escape of moisture from the web supply compartment.

4,135,200

BRIGHTNESS CONTROL CIRCUIT WITH PREDICTABLE BRIGHTNESS CONTROL RANGE

Robert L. Shanley, II, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed May 12, 1977, Ser. No. 796,340
Int. Cl.[2] H04N 5/68
U.S. Cl. 358—21 **16 Claims**



1. In a system including a signal channel for processing an image representative composite color video signal including a chrominance component, and a luminance component having periodically recurring image blanking intervals disposed between adjacent image intervals and containing a D.C. level determinative of image brightness; signal translating means responsive to said chrominance and luminance components for producing a color representative output signal containing said D.C. level, apparatus comprising:

means for providing periodic keying signals occurring during said blanking intervals and of a magnitude which may vary undesirably;

means coupled to said signal translating means and responsive to said keying signal for clamping said chrominance component to a reference level;

image brightness control means coupled to said signal channel for controlling said D.C. level of said output signal;

means for providing a voltage subject to variations correlated with undesired variations of said magnitude of said keying signal; and

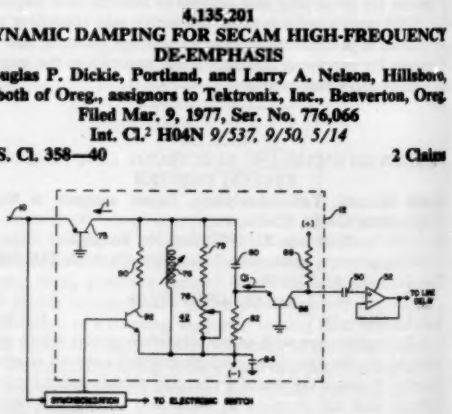
means for coupling said correlated voltage to said brightness control means.

4,135,201

DYNAMIC DAMPING FOR SECAM HIGH-FREQUENCY DE-EMPHASIS

Douglas P. Dickie, Portland, and Larry A. Nelson, Hillsboro, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Mar. 9, 1977, Ser. No. 776,066
Int. Cl.[2] H04N 9/537, 9/50, 5/14
U.S. Cl. 358—40 **2 Claims**



1. A SECAM decoder for decoding a composite SECAM signal; the decoder comprising:

synchronization means for separating a synchronization signal from the composite SECAM signal;

filter means for separating the composite SECAM signal into a luminance signal and a chrominance signal and for re-establishing the amplitude of the subcarrier of the chrominance, said filter means including synchronously switchable damping means switched by said synchronization signal;

processing means responsive to said chrominance signal for providing color difference signals, said processing means including means for sequentially routing said chrominance signal to provide a sequential signal, and means for demodulating said sequential signal to provide said color difference signals; and

means for combining said color difference signals and said luminance signal to provide primary color signals.

4,135,202
BROADCASTING SYSTEMS WITH FIBRE OPTIC TRANSMISSION LINES

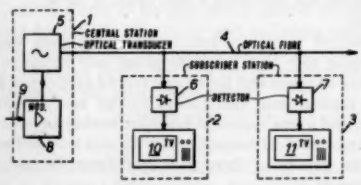
Albert E. Cutler, Barnet, England, assignor to Communications Patents Limited, London, England

Continuation of Ser. No. 528,849, Dec. 2, 1974, abandoned. This application Mar. 12, 1976, Ser. No. 666,267

Claims priority, application United Kingdom, Dec. 3, 1973, 55933/73

Int. Cl.[2] H04N *7/18;* **H04B** *9/00*

U.S. Cl. 358—86 **5 Claims**



1. A broadcasting system conveying signals by a signal path between a central station and a plurality of subscribers, comprising in combination, a common optical fibre in said signal path carrying signals to said plurality of subscribers from said central station, said fibre extending between an electro-optical transducer at said central station producing a light beam and photo-sensitive detector means at a reception position near the subscribers station, transmission means at the central station modulating the light beam for transmission through said optical fibre, said transmission means including modulation means producing a light beam modulated by a high frequency carrier which itself is modulated with video broadcast signals, conventional television receivers at the subscriber stations responsive to receive said high frequency carrier modulated with video broadcast signals, light beam demodulation means at said reception position responsive to said photo-sensitive detector means to convert said light beam into demodulated high frequency carrier radio wave signals modulated with video broadcast signals, and means coupling said demodulated signals from said reception position to said subscriber stations in a form suitable for direct application to said conventional television receivers without further signal processing.

4,135,203
METHOD AND APPARATUS FOR GENERATING COMPLEX VISUAL PATTERNS

Alan M. Friedman, 1306 Abbot Rd., Rockville, Md. 20851

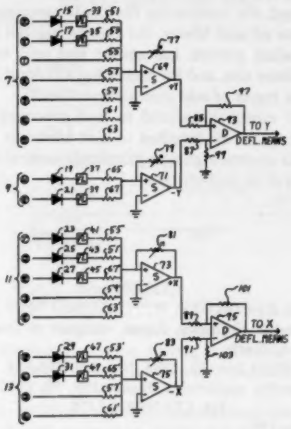
Filed Aug. 20, 1974, Ser. No. 498,979

Int. Cl.[2] H04N *7/02, 9/62;* **H04R** *5/00;* **G01R** *13/20*

U.S. Cl. 358—93 **19 Claims**

1. A method of producing a visual pattern from input audio frequency signals on a display means having at least first and second deflection means comprising the steps of:

deriving at least one a.c. signal which is a function of said input audio frequency signals, said a.c. signal within the audio frequency range,



directly applying said a.c. signal to said first deflection means to produce a corresponding image of said a.c. signal, and

providing at least one d.c. signal to said second deflection means which varies in accordance with positioning information related to said a.c. signal and which positions the image of said a.c. signal on said display means.

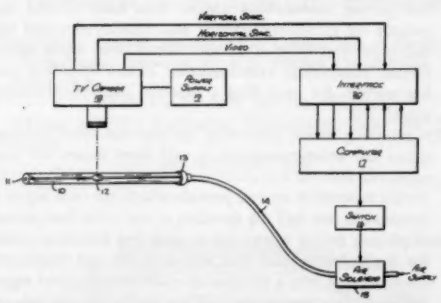
4,135,204
AUTOMATIC GLASS BLOWING APPARATUS AND METHOD

Ray E. Davis, Jr., Black River; Richard J. Becker, Watertown; Robert G. Foster, Brownville, all of N.Y., and Michael J. Westkamper, Clinton, Conn., assignors to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jun. 9, 1977, Ser. No. 804,905

Int. Cl.[2] C03B *9/00;* **H04N** *7/18*

U.S. Cl. 358—101 **9 Claims**



1. Apparatus for automatically, iteratively controlling in real time the growth of a blister in a heated, hollow glass rod in response to a controlled supply of air comprising:

(a) a TV camera for producing video images of said blister both when said supply of air is turned off and when growth of said blister has ceased;

(b) interface means connected to said camera for detecting the leading and trailing edges of said blister by analyzing said video images and for generating sets of digital numbers corresponding to said leading and trailing edges both

when said air supply is turned off and when said growth of said blister has ceased;

(c) programmable digital processor means connected to said interface means for analyzing said sets of digital numbers to determine the size of said blister, both when said air supply is turned off and when the growth of said blister has ceased, for computing the coast associated with the formation of said blister, for comparing the size of said blister when growth has ceased and said coast with a target blister size, and for producing a control signal based upon the result of said comparison; and

(d) control means connected to said processor means for controlling the air supplied to said blister in accordance with said control signal to iteratively control in real time the growth of said blister.

4,135,205

SKIP FIELD RECORDER WITH AUDIO MULTIPLEXER

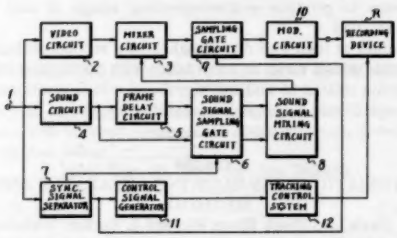
Hiroo Takahashi, Fujisawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 10, 1976, Ser. No. 694,818

Claims priority, application Japan, Jun. 19, 1975, 50-74657

Int. Cl.² H04N 5/76

U.S. Cl. 358—127 **2 Claims**



1. A system for recording a television signal containing a video signal having line periods and a sound signal, said system comprising:

input means extracting said sound signal from said television on signal and delaying said extracted sound signal for a first period substantially longer than each of said line periods for providing delayed and undelayed sound signals separated from said video signal, said input means further comprising synchronizing means detecting said line periods for providing a separate line synchronizing signal;

first sampling means controlled by said line synchronizing signal and being connected to said input means for sampling said delayed and undelayed sound signals alternately during successive second periods which are each equal in duration to one-half the duration of each said line period;

multiplexing means connected to said first sampling means for multiplexing said sampled delayed and undelayed sound signals into a continuous multiplexed sound signal made up of successive one-half line periods of said delayed and undelayed sound signals, alternately;

mixing means connected to said multiplexing means and said input means for mixing said continuous multiplexed sound signal and said video signal into a mixed, multiplexed sound and video signal;

second sampling means connected to said mixing means for sampling said mixed, multiplexed sound and video signal during alternate ones of said first periods; and

recording means connected to said second sampling means for recording the signal from the latter.

4,135,206

OBJECTIVE MOUNT FOR VIDEO DISC PLAYER

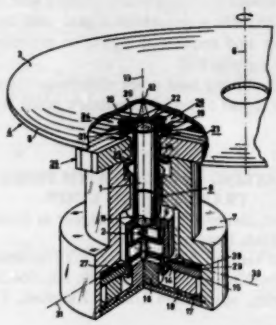
Wilhelm J. Kleuters; Gerard E. van Rosmalen; Martinus P. M. Bierhoff, and Kornelis A. Immink, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 4, 1977, Ser. No. 821,709

Claims priority, application Netherlands, Mar. 25, 1977, 7703232

Int. Cl.² H04N 5/76; G11B 7/12

U.S. Cl. 358—128 **7 Claims**



1. An optical scanning device for scanning a rotating reflective optically encoded record carrier, comprising radiation source means for providing a read beam of light;

a frame;

an objective means for concentrating the read beam to a scanning spot on a focussing plane, said objective means having an upper end facing said record carrier and a lower end remote from said record carrier and comprising a tube, and a lens system in said tube having an optical axis;

focussing electrical means for moving said tube and said lens system axially to focus said read beam in said record carrier;

radial tracking electrical means for moving the upper end of said tube about an axis of rotation disposed near the lower end thereof to move the read spot radially with respect to the record carrier; and

a bearing arrangement for the tube of said objective means comprising resilient suspension means rigidly connected to the lower end of the objective tube and to the frame for resiliently biassing said objective for both said rotational and axial motions provided by said focussing electrical means and said tracking electrical means.

4,135,207

APPARATUS FOR READING AN OPTICAL RADIATION-REFLECTING RECORD CARRIER INCLUDING A NARROW FOCUS CONTROL BEAM

Peter F. Greve, and Willem G. Opheij, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,612

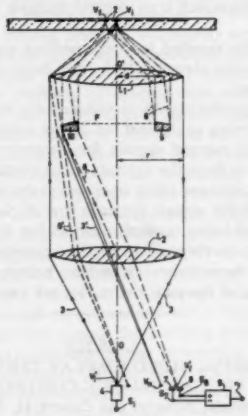
Claims priority, application Netherlands, Mar. 23, 1977, 7703123

Int. Cl.² H04M 5/76; G11B 7/12

U.S. Cl. 358—128 **9 Claims**

1. Apparatus for reading a radiation-reflecting information carrier, the information being recorded therein along tracks, said apparatus comprising radiation source and information detector means for providing a read beam, an objective system means including a lens element for focussing the read beam on the record carrier and for passing the read beam via the information carrier to the radiation source and information detector means, said radiation source and information detector means further comprising means responsive to said reflected read

beam for providing an output signal corresponding to the information from the record carrier, radiation deflecting element means in the path of the read beam and having a surface area substantially smaller than the cross-sectional area of the read beam for providing a narrow focussing beam passing obliquely through the objective system toward said record



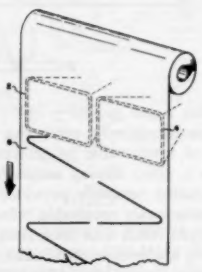
carrier to be reflected thereby, and radiation sensitive focussing detector means in the path of the narrow focussing beam reflected by the record carrier and including two radiation sensitive detectors for providing a focussing error signal indicating deviations in the focus of the objective system means with respect to the information carrier.

4,135,208

CATHODE RAY TUBE RECORDING APPARATUS

Donald E. Shafer, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 23, 1976, Ser. No. 753,715
Int. Cl.² H04N *5/88, 5/84;* H01J *29/98*
U.S. Cl. 358—130 **6 Claims**



1. Apparatus for positionally correlating the line scan of two cathode ray tubes comprising

means for producing a first signal for selectively positioning the line scan of a first one of said tubes,

means for producing a second signal for selectively positioning the line scan of the second one of said tubes,

comparator means for comparing said first and second signals as a function of the relative position of the line scan of said two tubes, and

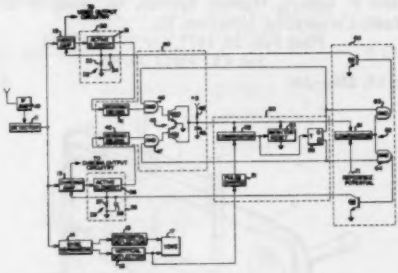
indicating means responsive to said comparator means for signaling a substantial equality between said first and second signals as being indicative of a substantial alignment of the line scan of said two tubes.

4,135,209

TIME-SHARED SAMPLE AND HOLD CIRCUIT

Robert P. Logan, Framingham, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Mar. 4, 1977, Ser. No. 774,617
Int. Cl.² H04N *7/02, 9/62*
U.S. Cl. 358—139 **16 Claims**



1. In a television receiver having a plurality of amplitude controlled stages, a time-shared sample and hold circuit comprising:

a plurality of level detecting means connected to respective ones of said controlled stages for receiving respective signals and for providing outputs representative of the amplitude thereof;

monitoring means connected to said level detecting means for providing an output representative of the operation thereof;

resetting means connected to said monitoring means and to said level detecting means for resetting said level detecting means in response to a prescribed operating condition thereof; and

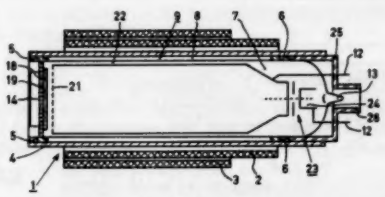
commutating means connected to said monitoring means and to said resetting means for enabling said monitoring means to alternatively monitor the operation of selected ones of said level detecting means and for providing a signal to said resetting means so that said selected ones of said level detecting means are reset in response to said prescribed operating conditions.

4,135,210

TELEVISION CAMERA TUBE WITH CENTERING MEANS

Nicolaas H. Limper, and Willem J. Lohuis, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 13, 1976, Ser. No. 686,092
Claims priority, application Netherlands, May 26, 1975, 7506138
Int. Cl.² H04N *5/26*
U.S. Cl. 358—217 **4 Claims**



1. In a television camera, a camera tube, a coil former surrounding said camera tube, and adjusting means in said coil former for securing the camera within the coil former, the improvement wherein adapted for insertion into opposite ends of said coil former and centering means are positioned about an

end of the tube whereby the camera tube is insertable into either end of said coil former.

4,135,211

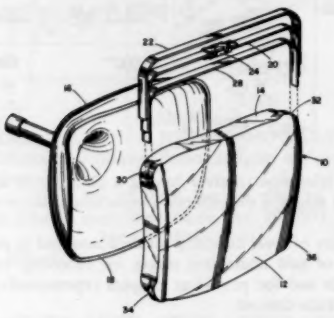
RECTANGULAR COLOR CATHODE RAY TUBE BULB WITH INTEGRAL CORNER BOSSES FOR ENHANCED IMPLOSION PROTECTION

Melvin F. Rogers, Western Springs, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Feb. 28, 1977, Ser. No. 772,625

Int. Cl.[2] H01J *29/87*

U.S. Cl. 358—246 **4 Claims**



1. An implosion-protected, rectangular-type color cathode ray tube bulb comprising a rectangular glass faceplate of the type having a viewing window and a flange extending rearwardly therefrom, to which flange is sealed a mating funnel, said bulb having a tension band system very tightly constricting said flange so as to provide implosion protection for the bulb by applying a compressive loading to the corners of the faceplate flange, said bulb being characterized by having on the outside of the faceplate flange at each corner and molded integrally with the flange, an incompressible load-concentrating boss for significantly reducing the corner area on which said tension band system applies its load, whereby the level of the compressive stresses generated in the flange at the flange corners and the resultant implosion protection provided by the tension band system is greatly enhanced.

4,135,212

PRINTING METHODS AND APPARATUS

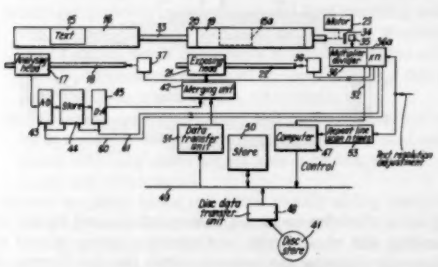
Peter C. Pugsley, Pinner, and Peter J. Wood, Potters Bar, both of England, assignors to Crosfield Electronics Limited, London, England

Filed Jun. 24, 1977, Ser. No. 809,685

Claims priority, application United Kingdom, Jun. 28, 1976, 26843/76

Int. Cl.[2] B41B *19/06*; H04N *1/04*

U.S. Cl. 358—256 **5 Claims**



1. A method of reproducing both pictorial matter and text on a sheet or surface for use in the production of a printed page, comprising the steps of:

photoelectrically scanning the said pictorial matter at a first resolution to derive electric signals representing the density values of successively scanned elements,

storing the said picture-representing signals line by line;

photoelectrically scanning the text at a second and higher resolution which is an integral multiple n of the first resolution;

merging the resulted text-representing signals and picture-representing signals which have been extracted from the said store;

controlling substantially simultaneously with the photoelectric scanning of the text, an output scanner in accordance with the merged signals for treating the said sheet or surface to form the reproductions thereon;

the output scanner being operated at the said higher resolution and the signals for each line of the pictorial matter extracted being applied n successive times to the output scanner, corresponding to the scanning of n successive lines of the said sheet or surface, before the signals for the next line of the pictorial matter are extracted.

4,135,213

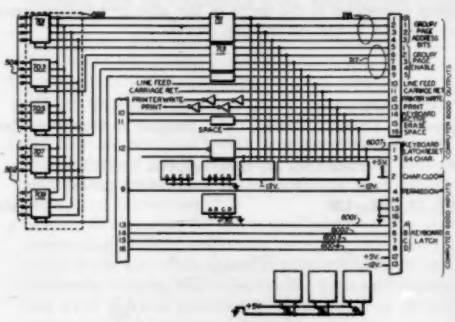
ROW GRABBING VIDEO DISPLAY TERMINAL HAVING LOCAL PROGRAMMABLE CONTROL THEREOF

Leonard Wintfeld, Astoria, and Robert H. Nagel, New York, both of N.Y., assignors to IDR, Inc., Farmingdale, N.Y.

Continuation-in-part of Ser. No. 611,843, Sep. 10, 1975. This application Apr. 23, 1976, Ser. No. 679,558

Int. Cl.[2] H04N *7/18, 7/08*

U.S. Cl. 358—142 **15 Claims**



1. A real time frame grabbing video display terminal for substantially instantaneously providing a continuous direct video display of a selectable predetermined video frame of information on a video display means from continuously receivable information remotely provided over a transmission media, said continuously receivable information comprising a plurality of pseudo video scan lines, each of said pseudo video scan lines having a television video scan line format and capable of comprising a complete self-contained packet of digital information sufficient to provide an entire displayable row of video data characters, said pseudo video scan line having an associated transmission time equivalent to said television video scan line, said packet of digital information comprising at least address information for said displayable row and data information for said displayable characters in said displayable row, said pseudo video scan line being a composite video signal, said terminal comprising microcomputer means for controlling the operation thereof, said microcomputer means being operatively connected to said transmission media for receiving said continuously receivable information, selection means operatively connected to said microcomputer means for variably selecting said predetermined video frame to be continuously displayed, local storage means for selectably retrievably lo-

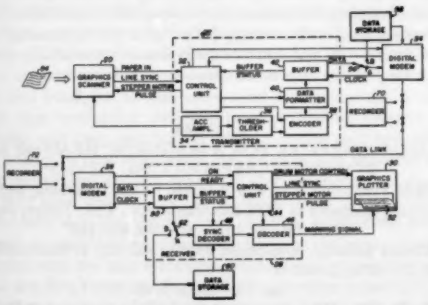
cally storing said continuously receivable video displayable data corresponding to said predetermined video frame, said local storage means being operatively connected to said microcomputer means, means operatively connectable to said microcomputer means, to said selection means and to said local storage means for selectively controlling the local storage of said continuously receivable information in said local storage means, said local storage selective control means comprising read only memory means comprising a condition responsive network for controlling said microcomputer means in accordance with a predetermined set of conditions for enabling said direct video display of said selected predetermined video frame from said plurality of continuously received pseudo video scan lines, and video display means operatively connected to said microcomputer means and said local storage means for providing said direct video display, said microcomputer means comprising means for processing said continuously received composite pseudo video scan lines for providing retrievable locally storable displayable video row data to said local storage means from each of said received pseudo video scan line signals pertaining to said selected predetermined video frame and a displayable video row signal to said video display means from said local storage means from each of said locally stored predetermined video frame pertaining pseudo video scan line signals for enabling said direct video display, said microcomputer means processing said continuously received composite pseudo video scan lines in accordance with said predetermined set of conditions, whereby said continuous direct video display of said selected predetermined video frame of information from said continuously received information is substantially instantaneously provided.

4,135,214

METHOD AND APPARATUS FOR COMPRESSING FACSIMILE TRANSMISSION DATA

Donald R. Weber, Saratoga, Calif., assignor to Dacom, Inc., Santa Clara, Calif.

Filed Jul. 2, 1969, Ser. No. 838,454
Int. Cl.[2] H04N 7/12, 1/00
U.S. Cl. 358—261 **32 Claims**



1. For use in the transmission of facsimile data, a method of encoding and time compressing data taken from a document, the face of which may be considered as being made up of a plurality of different elemental areas each of which contains indicia of a first state or indicia of a second state, comprising the steps of:

(a) sequentially examining the contents of each elemental area to identify alternating run lengths of indicia of said first and second states;

(b) counting the number of elemental areas in each run length; and

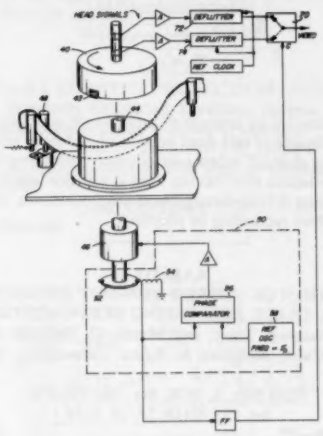
(c) converting the number counted for each run length into a code term including a first code word n-bits in length and capable of representing up to x elemental areas, and a series of further code words, each having a bit length which exceeds the bit length of the preceding code word by one bit, the number of said further code words required being determined by the extent to which the number counted exceeds the capacity of said first code word.

4,135,215

VIDEO RECORDING FORMAT FOR INCREASING TRACK-TO-TRACK CORRELATION

William T. Fearnside, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 22, 1977, Ser. No. 818,254
Int. Cl.[2] G11B 21/10; H04N 5/78
U.S. Cl. 360—70 **8 Claims**



1. A video tape bearing recorded video signals in parallel tracks of similar length that are slanted with respect to the tape longitudinal axis, such tracks having a track-to-track offset Δ, said offset being positive or negative depending on whether said tracks slant toward or away from, respectively, the direction of tape advance for recording or playing back the signals, said video signals being composed of successive video signal sequences which include sync information along with picture information, said video signal sequences representing successive video fields or frames, such sync and picture information occurring periodically during said signal sequences, characterized by: said video signals being arranged in said tracks according to a format in which a video signal sequence occupies a distance equal to one track length minus said offset Δ; slightly more or less than one full video signal sequence being recorded in one track length, depending upon whether said offset Δ is positive or negative, respectively, the remainder of a video signal sequence recorded near the end of one track being recorded near the beginning of the next track, thereby causing the video signal recorded in adjacent tracks to be highly correlated, i.e. sync information is arranged side-by-side in adjacent tracks and picture information representing corresponding picture detail in cnsecutive video fields or frames is arranged side-by-side in adjacent tracks, hence minimizing the effects of track-to-track cross-talk.

4,135,216

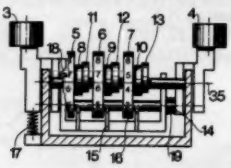
SWITCHING ARRANGEMENT FOR A TAPE RECORDER

Helmut Laufer, St. Georgen, Fed. Rep. of Germany, assignor to Dual Gebrüder Steidinger, St. Georgen, Fed. Rep. of Germany

Filed Dec. 15, 1977, Ser. No. 860,765
Int. Cl.[2] G11B 15/48; G09F 9/00
U.S. Cl. 360—74 **3 Claims**

1. A tape recorder comprising: driving means for moving a tape, said tape having a beginning dead portion on which no recording or playback is possible; counter means for indicating the tape length moved past a predetermined location in the recorder; manually operated first means for returning said

counter means to an initial position; switching means for shutting off said driving means for the tape and connected to said counter means so that said driving means for the tape is shut off when said counter means has returned to said initial position; and second means including an operating element for setting said counter means into a pre-initial position ahead of said

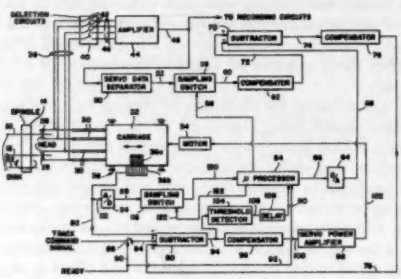


initial position by an amount of tape length corresponding at least to the length of said dead portion of said tape; said driving means being shut off when said counter means reaches again said initial position after having been at said pre-initial position, said tape being driven through said dead portion to said initial position before recording or playback.

4,135,217
UTILIZATION OF STORED RUN-OUT INFORMATION IN A TRACK FOLLOWING SERVO SYSTEM

James O. Jacques, Tracy, and Martin O. Halfhill, San Jose, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 2, 1976, Ser. No. 737,973
Int. Cl.[2] G11B *21/10, 5/54*
U.S. Cl. 360—77 **19 Claims**



1. A servo system for moving a recording head in relation to one of a plurality of data tracks on a rotatable disk having a repeatable error at a determined frequency and being subject to an offset at a frequency lower than said determined frequency, comprising:

(a) first generating means for generating first signals representing said offset;

(b) second generating means for generating second signals representing said repeatable error; and

(c) movable means, connected to said head, for coarse positioning said head in relation to said one track, said movable means including means, responsive to said first signals and said second signals, for moving said head to said one track so that during coarse positioning said head follows said error and said offset, and third generating means for generating third signals representing the positions of said positioning means;

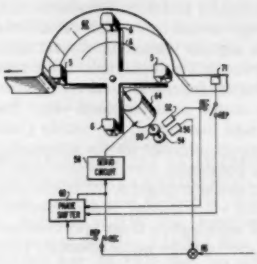
(d) said second generating means comprises means for feeding back said third signals from said third generating means to said second generating means, and means for delaying said feedback third signals a predetermined amount to produce said second signals; and

(e) said means for moving comprises means for producing error signals corresponding to the difference between said first signals and said second signals, and means for phase compensating said error signals by a predetermined amount, said third signals being delayed and said error signals being phase compensated in dependence on said repeatable error frequency.

4,135,218
MAGNETIC RECORDING AND REPRODUCING APPARATUS

Matsuaki Nakamura; Tatsuji Kitamoto; Yasuo Tamai, and Koshu Kurokawa, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed May 19, 1976, Ser. No. 687,821
Claims priority, application Japan, May 20, 1975, 50-59928
Int. Cl.[2] G11B *5/14, 5/12*
U.S. Cl. 360—127 **6 Claims**

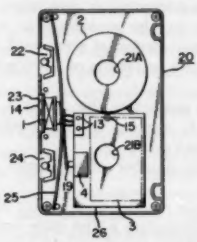


1. Apparatus for recording, with high density, and reproducing signals on a magnetic medium, comprising, at least one magnetic recording head and at least one magnetic reproducing head fixedly positioned relative to each other in an orthogonal relationship on a common head support mechanism, said recording head constructed of a first material selected from the group consisting of permalloy, alphenol and sendust and said reproducing head constructed of a second material selected from the group consisting of high density ferrite, single crystal ferrite, hot press ferrite and conventional ferrite providing said recording head with a substantially higher maximum magnetic flux density Bm and a substantially lower permeability μo at high frequencies than those of said reproducing head.

4,135,219
DEMAGNETIZER FOR A MAGNETIC HEAD OF A RECORDING-REPRODUCING DEVICE

Keiichi Yoshizawa, Chiba, and Isamu Nakao, Machida, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 20, 1977, Ser. No. 817,181
Claims priority, application Japan, Jul. 22, 1976, 51-86569; Jul. 22, 1976, 51-86570
Int. Cl.[2] G11B *5/46*
U.S. Cl. 360—128 **3 Claims**



1. A demagnetizer for demagnetizing the magnetic head of a conventional cassette-type recording-reproducing device,

comprising a case formed in the shape of a conventional tape cassette, said case having an opening for the insertion therein of said magnetic head, an electromagnet positioned in said case adjacent to said opening for applying a magnetic field to said magnetic head, a driving circuit for energizing said electromagnet to produce said magnetic field so that said field gradually decreases in intensity, and biasing means for resiliently urging said electromagnet against said magnetic head within said cassette opening so that said electromagnet and magnetic head are maintained in stationary position with respect to each other during a demagnetizing operation.

4,135,220

MECHANISM TO PREVENT UNWANTED TAPE EJECTION IN A MAGNETIC TAPE DEVICE

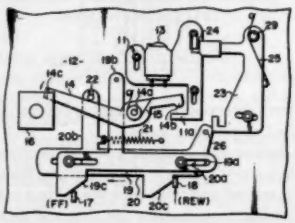
Hiroki Ichikawa, Hachioji, and Kazumi Miyazi, Fuchu, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1977, Ser. No. 825,413

Claims priority, application Japan, Aug. 19, 1976, 51-11120[U]; Aug. 19, 1976, 51-11120[U]

Int. Cl.² G11B *15/00*

U.S. Cl. 360—137 **8 Claims**



1. In a linking mechanism for magnetic tape device comprising a tape eject mechanism for ejecting a tape cassette from a tape cassette pocket, a tape eject button for actuating the tape eject mechanism, fast tape wind mechanism and/or re-wind mechanism, and a head-supporting plate movable to a playing position, the improvement being that there is provided a slide mechanism movable in association with the operation of said fast tape wind mechanism or re-wind mechanism and a tape eject stop mechanism movable to a prohibiting position to prohibit said tape eject button from actuating said tape eject mechanism, a first engageable device provided between the slide mechanism and the tape eject stop mechanism to move the tape eject stop mechanism to the prohibiting position in association with the movement of the slide mechanism, and a second engageable device provided between the head-supporting plate and the tape eject stop mechanism to move the tape eject stop mechanism to the prohibiting position in association with the movement of the head-supporting lever to the playing position.

4,135,221

ICE MELTING CIRCUIT ARRANGEMENT FOR A HIGH-VOLTAGE TRANSMISSION NETWORK

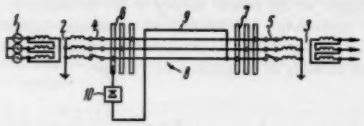
Georgy A. Genrikh; Leonid A. Nikonets; Lev S. Dostman, and Vsevolod T. Korenev, all of Lvov, U.S.S.R., assignors to Lvovsky Politekhnichesky Institut, Lvov, U.S.S.R.

Filed Dec. 16, 1976, Ser. No. 751,525

Int. Cl.² H02H *1/00*

U.S. Cl. 361—1 **17 Claims**

1. A high-voltage network comprising: a transmitting substation; a receiving substation; an overhead power transmission line connecting busbars of the transmitting and receiving substations; a source for melting ice on said overhead power transmission line joined, during ice melting, to at least one disconnected phase of said overhead power transmission line; and an insulated conductor joined, during ice melting, to at



least one disconnected phase of said overhead power transmission line from its opposite ends.

4,135,222

FAULT CURRENT PROTECTION SWITCH

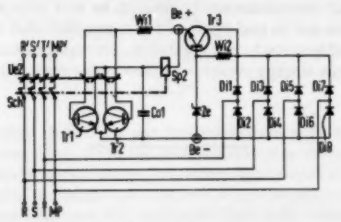
Bernd J. Siepmann, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Jan. 21, 1977, Ser. No. 760,974

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1976, 2602534

Int. Cl.² H02H *3/28*

U.S. Cl. 361—44 **12 Claims**



1. A fault current protection switch system comprising:

(a) a multi-path supply mains;

(b) a ground;

(c) a difference transformer means connected to each path of the supply means for detecting fault currents to ground;

(d) control and switching means for disconnecting the supply mains; and

(e) oscillation generator means connected to the difference transformer means and also to the control and switching means for checking the magnetization of a core of the difference transformer means, and, in the event of a change in the transforming properties of the core due to "mis"-magnetization by a fault current, said oscillation generator means triggers the control and switching means by a change of internal resistance to disconnect the supply mains by a change in the oscillation generator internal impedance, said oscillation generator means having a higher operating frequency than a frequency of the supply mains.

4,135,223

ELECTRONIC PROTECTION CIRCUIT

Kenneth P. Holmes, Austin, Tex., assignor to Esquire, Inc., New York, N.Y.

Filed Jun. 3, 1977, Ser. No. 803,365

Int. Cl.² H02H *3/20*

U.S. Cl. 361—56 **14 Claims**

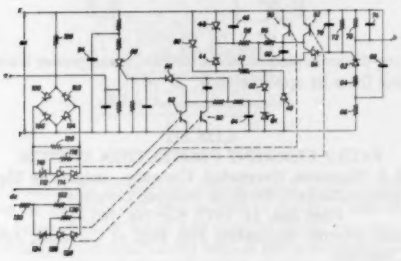
8. In a dc power supply connected to an ac source voltage, including

a rectifier having a two-line input to receive the ac source voltage,

gated semiconductor means connected to the two-line input responsive to a positive or negative trigger to short together the two-line input of the power supply, and

an overload cut out device responsive to open at least one of the two input lines when the lines are shorted together, the improvement in a electronic protection circuit for providing a trigger to the power supply in the presence of a source voltage exceeding a predetermined amplitude, comprising

charge storage means responsive to storing a charge from a first polarity of an applied ac voltage,



photoswitch means responsive to said source voltage exceeding the predetermined level, and

a gated semiconductor connected to said charge storage means and to said photoswitch means such that when said gated semiconductor is gated on, the charge stored on said charge storage means is applied as the outgoing trigger.

4,135,224

CERAMIC CAPACITOR HAVING A BISMUTH-CONTAINING SILVER-DOPED DIELECTRIC OF $(Pb,La)(Zr,Ti)O_3$

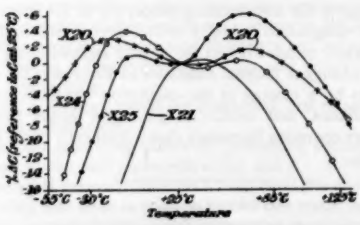
Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 619,089, Oct. 2, 1975, Pat. No. 4,027,209. This application May 31, 1977, Ser. No. 802,160

The portion of the term of this patent subsequent to May 31, 1994, has been disclaimed.

Int. Cl.² H01G 4/12

U.S. Cl. 361—321 **17 Claims**



1. A ceramic capacitor comprising a dielectric body and two spaced electrodes in contact with said dielectric body, said body consisting essentially of a dense high temperature ceramic, from 0 to 8 weight percent of a low temperature glass and at least 0.4 weight percent Bi_2O_3, said ceramic being doped with from 0.1 to 1.0 weight percent silver and consisting substantially of a lead zirconate wherein from 0.07 to 0.16 molar parts of said lead are replaced by lanthanum and wherein from 0.10 to 0.40 molar parts of said zirconate are replaced by titanate, from 0 to 100% of said Bi_2O_3 being contained in said glass.

4,135,225

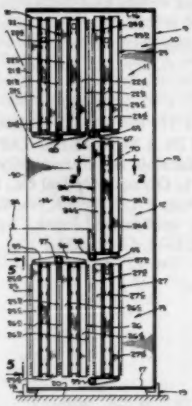
PIVOTAL STRUCTURAL ENCLOSURE

James W. Welsh, 1350 Loring, San Diego, Calif. 92109, and Dwight L. Harris, 2012 Camineto Circular Sur, San Diego, Calif. 92037

Filed Sep. 19, 1977, Ser. No. 834,795

Int. Cl.² H02B 1/04

U.S. Cl. 361—382 **21 Claims**



1. In a system incorporating electrical equipment mounted in cages attached to pivoting gates,

(a) an enclosure and multiple gates respectively located in multiple interior spaces in the enclosure, the spaces including first, second and third such spaces in a row, the second space located intermediate the first and third spaces, the gates having opposed primary and secondary cage sides,

(b) means mounting said gates to swing bodily relatively within said interior spaces so that at least a first of said gates has an initial position in said first space in which a primary cage side of the first gate faces forwardly, and an alternate position in said second interior space in which the opposite cage side of the first gate faces forwardly, and a second of said gates has an initial position in said first space in which a primary cage side of the second gate is forwardly exposed when said first gate is swung into said alternate position in said second interior space, there also being gates in said third space and which are swingable into said second space,

(c) at least one of said opposed sides defined by electric equipment.

4,135,226

AUTOMATIC JUNCTION UNIT

Friedrich J. A. Kourimsky, Bensheim, Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 24, 1977, Ser. No. 827,294

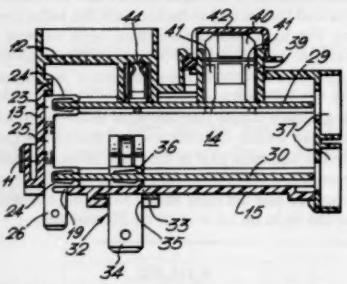
Claims priority, application United Kingdom, Sep. 1, 1976, 36116/76

Int. Cl.² H02B 1/02

U.S. Cl. 361—415 **4 Claims**

1. An electrical junction box comprising two printed circuit boards mounted spaced apart in face-to-face relation in an insulating housing and a series of terminals mounted in parallel relation adjacent a side wall of the housing and extending transversely of an adjacent edge of each board, each terminal comprising an elongated strip having two fork contacts ex-

tending in spaced co-planar relation laterally of the strip, said contact engaging selected tracks on respective boards, and



further, said strip having at one longitudinal and a tab contact protruding externally of the housing.

4,135,227

LEADLESS ELECTRIC FLASH LAMP ASSEMBLY

Timothy Fohl, Carlisle, Mass., assignor to GTE Sylvania Incorporated, Danvers, Mass.

Filed Jan. 30, 1978, Ser. No. 873,378
Int. Cl.² G03B 15/02
U.S. Cl. 362—6 **16 Claims**

1. A flash lamp assembly comprising:

a longitudinal, light-transmitting housing defining a plurality of juxtapositioned chambers therein aligned in a substantially linear manner; and

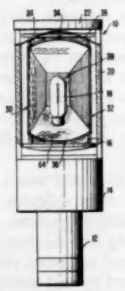
a plurality of electrically-activated flash lamps each located within a respective one of said chambers and adapted for being electrically activated through said housing, each of said flash lamps having a light-transmitting envelope and first and second spacedly positioned electrically conductive means located externally of said envelope for capacitively igniting said flash lamp through said envelope in response to receipt of electrical energy through said housing.

4,135,228

UNDERWATER ILLUMINATION DEVICE

Joe J. Lones, P.O. Box 6313, San Diego, Calif. 92106

Filed Jan. 21, 1977, Ser. No. 761,023
Int. Cl.² G03B 15/02; H05B 33/02; F21V 7/09
U.S. Cl. 362—18 **6 Claims**



1. In an underwater light source assembly for photography, the combination, with a power source plug base, a bulb operatively connected on said base, a transparent tubular sleeve fixed to said base about said bulb, and a cap on said sleeve, of a flux control reflector comprising:

A planar reflector base having a specular reflective surface disposed in a first plane relative to the bulb;

planar side reflector plates with specular reflective surfaces angularly related in second and third planes relative to the bulb;

said second and third planes being substantially equal and opposite with respect to the plane of the base; and

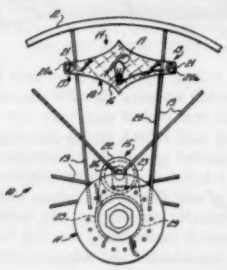
each of said surfaces of said reflective base and side reflector plates having a series of flutes thereon, each flute having a main reflective surface and a step surface, the flutes being arranged in recurring pattern throughout substantially the entire surface.

4,135,229

SAFETY DEVICE FOR USE ON A BICYCLE WHEEL

Esteban Modurkay, 1411 Dekalb Ave., Brooklyn, N.Y. 11237

Filed Sep. 1, 1977, Ser. No. 829,768
Int. Cl.² B62J 5/00
U.S. Cl. 362—72 **3 Claims**



1. A safety device for use in combination with a bicycle wheel having a hub, a rim and spokes connecting the hub to the rim, the safety device comprising safety light means and means for powering the safety light, the safety light means comprising socket means for receiving an electric light bulb, a housing for containing the socket means and the light bulb, the housing being constituted of two identical halves, each of said halves being in the form of a multi-facted light transmissive lens, a pair of clamping projections extending outwardly from opposite extremities of each of the lenses, the clamping projections of one lens being spaced from the clamping projections of the other lens by a distance about equal to the diameter of the spokes, a threaded bore formed in each of the projections for receiving a screw, the threaded bores in one lens aligning with those in the other lens, a respective screw received in each two aligned bores, the screws holding the lenses together and being adapted to cooperate with the projections to clamp the housing onto the spokes with the lenses facing laterally away from the wheel, the means for powering the safety light comprising a housing for receiving at least one dry cell battery, means for clamping the battery housing to the hub, respective electrically conductive means attached to the housing for contacting the respective poles of the battery, and means for electrically connecting the battery in series with the socket means.

4,135,230

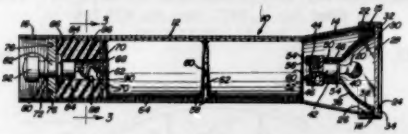
FLASHLIGHT

Joseph M. Armbruster, 2521 NE. 4th Ave., Pompano Beach, Fla. 33064

Filed Feb. 15, 1977, Ser. No. 768,704
Int. Cl.² F21L 1/00
U.S. Cl. 362—206 **3 Claims**

1. A battery actuated flashlight including an elongated tubular body having open front and rear ends, said body being constructed of conductive metal, a combined reflector and lens assembly supported from the front end of said body, a bulb including center and base terminals removably supported from said reflector and lens assembly with said base terminal electrically connected, by said assembly, to said body and said center terminal out of electrical connection with said body, battery means slidably disposed in said body including a forward

facing forward terminal in electrical contact with said center terminal and a rearwardly facing rear terminal, a thick walled sleeve disposed and longitudinally slidable in said rear end of said body and constructed of deformable and resilient dielectric material, a conductive contact disk slidable in said body and disposed across the front end of said sleeve defining a contact electrically contacting said rear terminal, a thrust member threadedly mounted in the rear end of said body and adjustable positioning therealong for variably axially compressing and biasing said sleeve, and thus said battery, forwardly in said body, said thrust member being constructed of conductive material and being in electrical contact with said



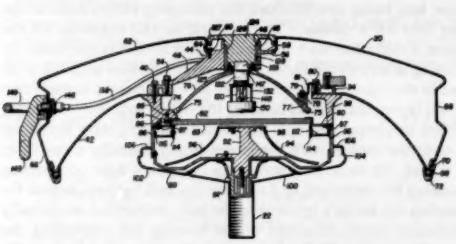
body, and switch means supported from said thrust member and including a switch actuator therefor disposed in recessed position within said rear end of said body and operable from the exterior thereof, said switch means defining a ground terminal therefor grounded to said thrust member and a second terminal insulated relative to said thrust member and disposed within the interior of said sleeve, and means within the interior of said sleeve electrically connecting said second terminal to said contact, said switch means being secured through a central portion of said thrust member and said actuator comprising a portion of said switch means projecting rearwardly of said thrust member into the rear end of said sleeve.

4,135,231

SURGICAL LIGHT ASSEMBLY

Kenneth J. Fisher, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed May 10, 1977, Ser. No. 795,645
Int. Cl.[2] F21V *21/26*
U.S. Cl. 362—269 **27 Claims**



1. A light assembly comprising, in combination,

a first reflector having a substantially parabolic concave reflective surface, the first reflector being a cool reflector capable of transmitting infrared radiation while reflecting essentially all visible light,

a second reflector having an annular divergent external reflective surface,

support means mounting the first and second reflectors in fixed spaced coaxial relation to one another with their respective surfaces in generally opposed relation,

a third reflector having an annular divergent internal reflective surface, such third reflector being mounted on the support means in fixed coaxial relation with and having its reflective surface extending in radially outwardly spaced relation to the first and second reflectors, the reflective surfaces on the first and third reflectors being directed in the same general axial direction,

a light source,

an opaque light shield having a reflective surface thereon,

light shield support means mounting the opaque light shield in fixed relation to the light source and between the light source and the second reflector with the reflective surface facing the light source to reflect back toward the first reflector and the light source at least the major portion of the light rays emitted in the direction of the second reflector by the light source, and

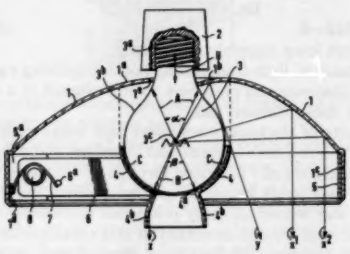
mounting means supporting the light source and the opaque light shield within the concave portion of the first reflector on the common axis of the three reflectors, the mounting means including actuating means operable to move the light source and the light shield along the common axis to focus the light on an area to be illuminated.

4,135,232

SPOT-LIGHT REFLECTOR STRUCTURE

Hans-Peter Berkenhoff, Lüdenscheid, Fed. Rep. of Germany, assignor to Hoffmeister-Leuchten K. G., Lüdenscheid, Fed. Rep. of Germany

Continuation of Ser. No. 701,379, Jun. 30, 1976, abandoned.
This application Dec. 29, 1977, Ser. No. 865,477
Int. Cl.[2] F21V *7/00, 7/06*
U.S. Cl. 362—306 **3 Claims**



1. A spot-light reflector structure for incandescent lamps comprising in combination

(a) a substantially parabolic main reflector whose inner surface reflects light and whose outer surface separates a space for accommodating an incandescent lamp from its surroundings, said reflector having a passage for the neck of an incandescent lamp in the apex region thereof and said reflector having a cylindrical projection at the wide end opposite said apex region forming a duct which is open at the front side thereof;

(b) a single auxiliary reflector having the shape of a full hemisphere arranged in coaxial relation to said main reflector and positioned to be narrowly spaced from the bulbous portion of an incandescent lamp, said auxiliary reflector having an aperture in the peak region thereof;

(c) a tubular extension projecting forwardly from said aperture and forming a third light reflector on the inner surface thereof;

(d) a substantially cylindrical insert inside said cylindrical projection of said main reflector positioned by friction inside said cylindrical projection;

(e) a radially extending arm supporting said auxiliary reflector at one end thereof and being pivotally supported at the opposite end thereof by said insert; and

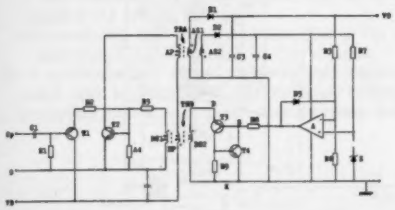
(f) a mouse-trap type spring having one end resting against said projection of said main reflector and another end resting against said arm and biasing said arm and said auxiliary reflector toward the space intended to be occupied by an incandescent lamp whereby said arm and said auxiliary reflector are allowed against the action of said mouse-trap type spring to be moved away from an incandescent lamp arranged in said main reflector to allow ready replacement of an incandescent lamp through said

open front of said cylindrical projection of said main reflector.

4,135,233
VOLTAGE CONTROL CIRCUIT FOR A DC-TO-DC CONVERTOR

Ole S. Seiersen, Kokkedal, Denmark, assignor to Christian Rovsing A/S, Herlev, Denmark

Filed Jun. 9, 1977, Ser. No. 805,108
Claims priority, application Denmark, Jun. 10, 1976, 2576/76
Int. Cl.² H02M 3/335
U.S. Cl. 363—21 **6 Claims**

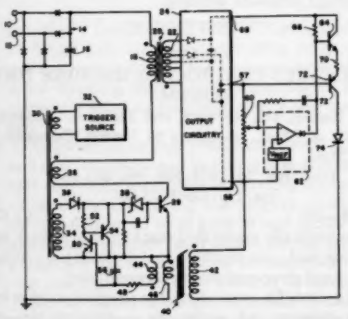


1. A voltage control circuit for a DC-to-DC convertor of the type comprising a transistor circuit with an alternately conductive and switched off transistor, the emitter-collector circuit of said transistor being composed partly of the primary winding of a load transformer, partly of the primary winding of a control transformer having a secondary winding connected to the base emitter circuit of the transistor, wherein the control transformer is provided with a further winding whose ends are connected to a souce electrode and a drain electrode, respectively, of a transistor circuit which also has a control electrode to which is supplied a control voltage dependent on the output voltage, said transistor circuit being adapted to substantially short-circuit the winding when the winding voltage attains a predetermined value in relation to the control voltage.

4,135,234
SATURABLE REACTOR SWITCH CONTROL FOR SWITCHING REGULATOR POWER SUPPLIES

Charles O. Forge, Los Altos, Calif., assignor to Boschert Associates, Sunnyvale, Calif.

Filed Feb. 9, 1978, Ser. No. 876,342
Int. Cl.² H02M 3/335
U.S. Cl. 363—21 **6 Claims**



1. In a switching regulator power supply having a variable switch for pulsing unregulated input D.C., means responsive to said pulsed D.C. for rectifying and producing desired D.C. output voltages, and control circuitry responsive to the level of at least one of said output voltages for controlling the on-time of said variable switch, said control circuitry comprising:

a current sensing element having first, second, and third windings on a saturable core, said first winding being in series with said variable switch;

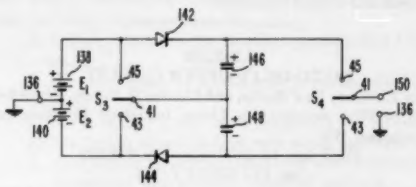
control current generating circuitry responsive to the D.C. output voltage level of said power supply and coupled to said second winding for producing a D.C. current for saturation of said current sensing element core; and

switch triggering circuitry coupled to said third winding for turning off said variable switch when the current in said first winding overcomes the saturation of said core.

4,135,235
SYNTHESIZER CIRCUIT FOR GENERATING THREE-TIER WAVEFORMS

Richard H. Baker, Bedford, Mass., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 31, 1977, Ser. No. 846,696
Int. Cl.² H02M 7/537
U.S. Cl. 363—43 **25 Claims**



1. A DC voltage to AC voltage converter, including a first stage comprising:

first and second power terminals for receiving positive and negative polarity DC voltages, respectively;

a third power terminal for connection to a point of reference potential;

an output terminal, said AC voltage being developed across said third power and output terminals;

first switching means having first and second input terminals connected to said first and second terminals of said converter, respectively, and an output terminal;

second switching means having first and second input terminals, and an output terminal connected to said output terminal of said converter;

first unidirectional current means connected between the first input terminals of said first and second switching means, respectively, said first unidirectional current means being polarized for passing current from said first power terminal to said first input terminal of said second switching means;

second unidirectional current means connected between said second input terminals of said first and second switching means, respectively, said second unidirectional current means being poled for passing current from said second input terminal of said second switching means to said second power terminal; and

first and second electrical charge storage means connected in a series circuit between said first and second input terminals of said second switching means, the common connection between said first and second charge storage means being connected to the output terminal of said first switching means;

said first switching means being operable to a first condition for establishing a current conduction path between its output and first input terminals, whereby a positive voltage equal in level to the sum of the levels of said positive polarity DC voltage and the voltage across said first charge storage means is applied to the first input terminal of said second switching means, and concurrently said second charge storage means charges, when necessary,

for providing thereacross a negative level of voltage approaching the sum of the levels of said positive and negative polarity DC voltage, and said negative polarity DC voltage is applied to the second input terminal of said second switching means;

said first switching means being operable to a second condition for establishing a current conduction path between its output and second input terminals, whereby a negative voltage equal in level to the sum of the levels of said negative polarity DC voltage and the voltage across said second charge storage means is applied to the second input terminal of said second switching means, and concurrently said first charge storage means charges, when necessary, for providing thereacross a positive level of storage approaching the sum of the levels of said positive and negative polarity DC voltages, and said positive polarity DC voltage is applied to the first input terminal of said second switching means;

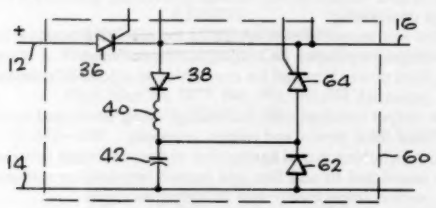
said second switching means being operable to a first condition for establishing a current conduction path between its first input and output terminals, and a second condition for establishing a current conduction path between its second input and output terminals.

4,135,236

DC-TO-DC CHOPPER CIRCUIT

Stanley L. Mann, New Berlin, and Charles E. Rettig, Brookfield, both of Wis., assignors to Litton Industrial Products Inc., Milwaukee, Wis.

Filed Sep. 15, 1977, Ser. No. 833,538
Int. Cl.² H02M 3/315
U.S. Cl. 363—124 **7 Claims**



1. A DC-to-DC chopper circuit responsive to a regulator system and connected between a source of DC voltage having a first voltage level other than zero voltage potential and a DC output bus, the DC-to-DC chopper comprising:

(a) first semiconductor switch means responsive to the regulator system and periodically connecting the source of DC voltage to the DC output bus,

(b) resonating circuit means responsive to said first semiconductor switch means applying the DC voltage at the first voltage level, said resonating circuit means increasing the DC voltage from the first voltage level to a determinable second voltage level,

(c) second semiconductor switch means responsive to the regulator system and periodically connecting said resonating circuit means at said second voltage level to the DC output bus so that the electrical continuity of said first semiconductor switch means is interrupted and said second voltage level decreases to the zero voltage potential, and

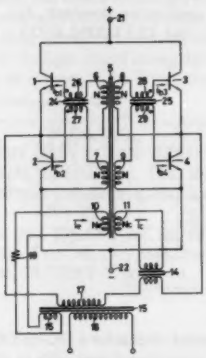
(d) means electrically connected in series with said second semiconductor switch means, said last-named means responsive to said resonating circuit means reaching said zero voltage potential establishing a freewheeling current in the output bus continuing until the electrical continuity of said second semiconductor switch means and said last-named means are interrupted by the next periodic cycle of said first semiconductor switch means.

4,135,237

INVERTER

Tadao Suzuki, and Shigeaki Wachi, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1977, Ser. No. 846,055
Claims priority, application Japan, Oct. 30, 1976, 51-130764; Oct. 30, 1976, 51-130765
Int. Cl.² H02M 7/537
U.S. Cl. 363—132 **17 Claims**



1. An inverter comprising:

(a) a DC power source having first and second terminals;

(b) switching means including,

a plurality of switching devices each having first, second and third electrodes and connected between the first and second terminals of said DC power source,

control means to supply the first electrode of each of said switching devices with control signals, respectively, and coupling means to couple said control signals to each other, selectively;

(c) AC output means having a pair of output terminals and connected to said switching devices;

(d) said control means including an oscillation transformer having a saturable core and a plurality of windings, said windings being connected between the first and second electrodes of said switching devices, respectively, and further including a voltage feedback winding; and

(e) said AC output means including an output transformer having a primary winding and first and second secondary windings, said primary winding being connected to said switching devices, said first secondary winding being connected between said pair of output terminals, and said second secondary winding being connected in parallel to said voltage feedback winding.

4,135,238

NUMERICALLY CONTROLLED MACHINE TOOL SYSTEM

Samuel M. Hamill, III, Scituate, and James C. Kilbane, Belmont, both of Mass., assignors to Hamill Company, Inc., Norwell, Mass.

Filed Jan. 26, 1976, Ser. No. 652,143
Int. Cl.² G06F 15/46
U.S. Cl. 364—107 **21 Claims**

12. In a numerically controlled machine tool system including a machine tool, said machine tool including a cutting element and a workpiece positioning element, and

a control system for controlling the relative position of said cutting element and workpiece positioning element including:

A. an operator controlled positioning control means including axes drive means for controlling the relative position of said cutting element to a succession of spatial points defined with respect to a reference point on said

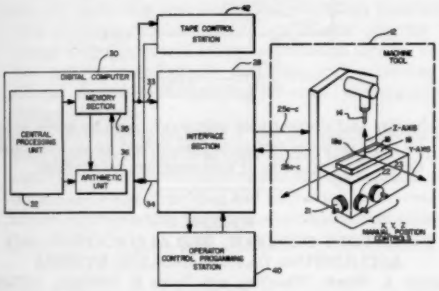
workpiece positioning element, wherein each of said spatial points corresponds to a point at which a subsequent machine operation is to be performed,

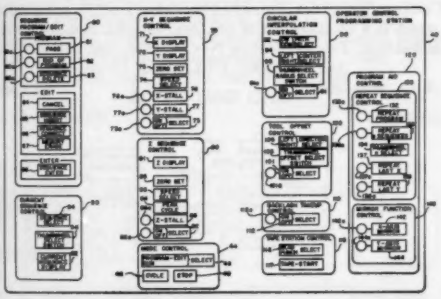
B. a position encoding means for generating a coordinate data signal representative of the coordinates corresponding to the current position of said cutting element with respect to said reference point,

C. an operator controlled sequence entry means including a digital computer, interface means and operator control/programming station, said sequence entry means being for generating and storing in the memory of said digital computer at least one sequence of digital data comprising a set of digital signals for an associated one of said succession of spatial points, said set of digital signals being related to:

the coordinate data signal representative of the associated one of said succession of spatial points,

D. a transformation means including said digital computer, said interface, and said operator control/programming station, said transformation means being for





selectively transforming each of said stored sequences of digital data into a corresponding series of encoded machine tool control signals wherein each of said series is for directing the relative positioning of said cutting element toward an associated one of said spatial points, and

E. a computer controlled positioning means responsive to said control signals and including said axes drive means, said computer controlled positioning means being for successively controlling the relative position of said cutting element to be at each of said spatial points,

and wherein said sequence entry means further includes:

a sequence numbering means for automatically storing in said digital computer memory in association with each sequence a unique reference symbol selected from a predetermined ordered succession of symbols, said successively stored sequence forming an ordered succession of sequences in said computer memory with said selected reference symbol being related to the order of said stored sequences in said memory, and

wherein said means for selectively transforming said stored sequences to said series of encoded machine tool control signals includes:

an automatic current sequence selection means for automatically selecting as a current sequence to be transformed, each of a succession of current sequences from said stored sequences in said computer memory, and

wherein said sequence transformation means further includes:

a path determining means for determining for each identified current sequence form said stored data associated with said sequence the relative path to be followed by said cutting element said path to be followed being relative to said reference point and connecting the current coordinates of said cutting element and the coordinates associated with said current sequence,

an improvement to said sequence entry means comprising:

operator controlled helical data entry means for generating and storing in said computer memory at least one helical sequence of digital data defining a helical path about a reference axis and terminating at an associated one of said succession of spatial points, comprising a further set of digital signals, said further set being representative of:

A. helical select data for identifying said helica sequences,

B. the coordinates of a reference point on said helical path,

C. the direction of approach along said helical path,

D. the length of said helical path along said axis, and

E. the number of revolutions about said references of said helical path per unit length of said axis.

4,135,239

NUMERICALLY CONTROLLED MACHINE TOOL SYSTEM

Samuel M. Hamill, III, Scituate; James C. Kilbane, Belmont, and Stanley F. Zamkow, North Abington, all of Mass., assignors to Hamill Company, Inc., Norwell, Mass.

Division of Ser. No. 652,143, Jan. 26, 1976. This application May 21, 1976, Ser. No. 688,891

Int. Cl.[2] G06F *15/46*

U.S. Cl. 364—107 **6 Claims**

1. In a numerically controlled machine tool system including a machine tool, said machine tool including a cutting element and a workpiece positioning element, and

a control system for controlling the relative position of said cutting element and workpiece positioning element including:

A. an operator controlled positioning control means including axes drive means for controlling the relative position of said cutting element to a succession of spatial points defined with respect to a reference point on said workpiece positioning element, wherein each of said spatial points corresponds to a point at which a subsequent machining operation is to be performed,

B. a position encoding means for generating a coordinate data signal representative of the coordinates corresponding to the current position of said cutting element with respect to said reference point,

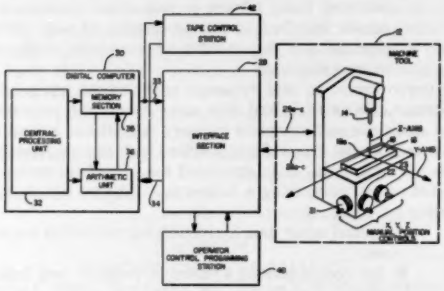
C. an operator controlled sequence entry means including a digital computer, interface means and operator control/programming station, said sequence entry means being for generating and storing in the memory of said digital computer at least one sequence of digital data comprising a set of digital signals for an associated one of said succession of spatial points, said set of digital signals being related to:

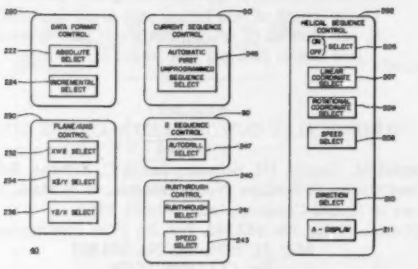
the coordinate data signal representative of the associated one of said succession of spatial points,

D. a transformation means including said digital computer, said interface, and said operator control/programming station, said transformation means being for

selectively transforming each of said stored sequences of digital data into a corresponding series of encoded machine tool control signals wherein each of said series is for directing the relative position of said cutting element toward an associated one of said spatial points, and

E. a computer controlled positioning means responsive to said control signals and including said axes drive means, said computer controlled positioning means being for successively controlling the relative position of said cutting element to be at each of said spatial points,





an improvement to said sequence entry means comprising:

a selectively operative absolute data entry means having:

A. operator controlled means for generating at least one sequence comprising a set of digital signals for an associated one of said succession of spatial points, said set of digital signals being related to:

the absolute coordinates of said associated one of said succession of spatial points, and

B. means for storing said set in the memory of said computer.

4,135,240

PROTECTION OF DATA FILE CONTENTS

Dennis M. Ritchie, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 9, 1973, Ser. No. 377,591

Int. Cl.[2] G06F *11/10, 13/00*

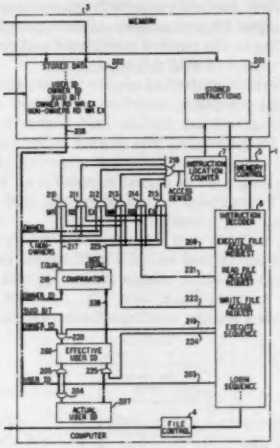
U.S. Cl. 364—200 **4 Claims**

1. In a computer system serving at least one external current user and having stored at least one file of executable program instructions owned by a file owner different from said current user,

means for storing access control information in association with said file, including identification of said file owner and a control indicator having selectively either a first or a second binary state,

means for sensing said first state of said control indicator, and

means responsive to said first state of said control indicator for changing temporarily the identification of said current user of the computer system to that of said file owner during the execution of said program instructions,



whereby said current user selectively may be given access by said computer system to files owned by said file owner during the execution of said program instructions.

4,135,241

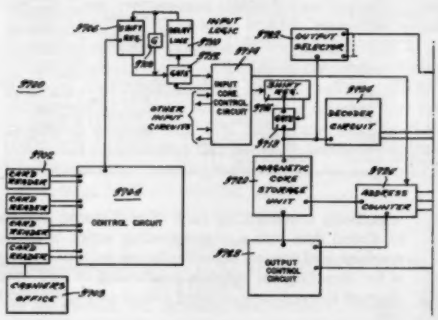
INVENTORY CONTROL, BED ALLOCATION AND ACCOUNTING DATA HANDLING SYSTEM

Eugene A. Stanis, Wheeling, and Louis E. Philipps, Addison, both of Ill., assignors to Medelco, Incorporated, Skokie, Ill.

Continuation of Ser. No. 117,839, Feb. 22, 1971, abandoned, which is a continuation of Ser. No. 761,042, Sep. 20, 1968, abandoned. This application Nov. 4, 1974, Ser. No. 520,718

Int. Cl.[2] G06F *3/08, 15/22, 15/24*

U.S. Cl. 364—200 **17 Claims**



1. An automated inventory control and accounting system for processing a plurality of data messages containing charge data and inventory data and for automatically compiling charge records organized by a plurality of charge codes from said charge data in the form of monetary charges for items or services to be charged to various ones of said plurality of charge codes and for automatically compiling inventory records organized by a plurality of item codes from said inventory data reflecting the inventory of said items comprising

means for receiving said data messages, said data messages receiving means comprising a plurality of remote stations, each of at least some of said remote stations including means for manually entering said data messages into said remote stations, said manually entering means including

means for entering a specific charge code of said plurality of charge codes into said remote station, means for entering a specific item code of said plurality of item codes corresponding to one of said items or one of said services into said remote station and means for entering a multiplier corresponding to the quantity of said one item or service into said remote station, each of at least some of said data messages including said specific charge code, said specific item code and said multiplier,

a first information storage location,

means for transmitting said data messages from said remote stations to said first information storage location for storage therein,

a second information storage location,

means for monitoring said data messages stored in said first information storage location and for automatically extracting said charge codes, item codes and multipliers from said data messages and for transmitting said charge codes, item codes and multipliers to said second information storage location for storage therein,

means for retrieving item codes and multipliers associated with a predetermined charge code of said plurality of charge codes from said second information storage location and for automatically compiling and outputting a charge record corresponding to said predetermined charge code and

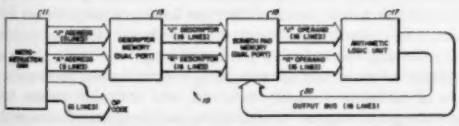
means for retrieving item codes and multipliers associated with a predetermined item code of said plurality of item codes from said second information storage location and for automatically compiling and outputting an inventory record corresponding to said predetermined item code.

4,135,242

METHOD AND PROCESSOR HAVING BIT-ADDRESSABLE SCRATCH PAD MEMORY

William P. Ward, Poway, and George B. Gillow, Bonita, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 7, 1977, Ser. No. 849,048
Int. Cl.[2] G06F *13/00*
U.S. Cl. 364—200 **26 Claims**



1. A microprogrammed processor for processing variable length operands and including a microinstruction memory, the processor comprising:

(a) first memory means in the microinstruction memory for storing a descriptor having a length field and an address field thereof;

(b) scratch pad memory means for storing a plurality of variable length operands;

(c) an N-bit arithmetic and logic means for performing arithmetic and logic operations on groups of N bits and on groups of less than N bits;

(d) means responsive to said first memory means and to the microinstruction memory for fetching an operand having a boundary bit location defined by the address field and a number of bits defined by the length field from said scratch pad memory means; and

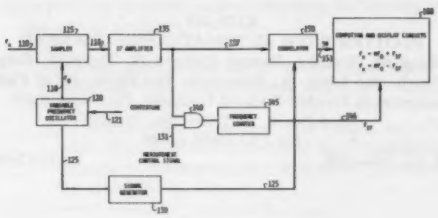
(e) means responsive to said first memory means and to said scratch pad memory means for aligning the groups of N bits and said groups of less than N bits to the inputs of said N-bit arithmetic and logic means in response to the address field.

4,135,243

SINGLE SAMPLER HETERODYNE METHOD FOR WIDEBAND FREQUENCY MEASUREMENT

Luiz Peregrino, and Darwin H. Throne, both of Cupertino, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 15, 1977, Ser. No. 816,041
Int. Cl.[2] G01R *23/14*
U.S. Cl. 364—484 **7 Claims**



1. A method for use in determining the frequency of an input signal, the method comprising the steps of:

receiving an input signal of an unknown frequency;

providing a control signal;

providing a sampling signal, said sampling signal varying in frequency in response to said control signal;

sampling said input signal and providing an intermediate frequency signal in response to said sampling signal; and

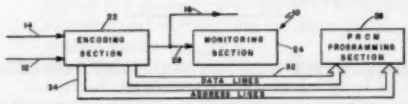
correlating the intermediate frequency signal with said control signal and providing in response thereto an indication of the harmonic number and the sideband which corresponds to the relationship of the unknown frequency of said input signal to the frequency of said sampling signal and to the frequency of said intermediate frequency signal.

4,135,244

METHOD AND APPARATUS FOR PROGRAMMING AND REDUCING RUNOUT IN ROTATING SHAFT VIBRATION SIGNAL DETECTION

Robert D. Davis, Spring Valley, Calif., assignor to Spectral Dynamics Corporation, San Diego, Calif.

Filed Jul. 20, 1977, Ser. No. 817,363
Int. Cl.[2] G01M *1/16*
U.S. Cl. 364—508 **21 Claims**



1. A circuit for reducing by an electrical subtract runout data signal the runout data signal portion of a composite electrical runout signal and vibration signal generated in a proximity probe circuit by a rotating shaft, which composite signal is synchronized with the rotating shaft tachometer signal, comprising,

a programmable digital memory circuit module,

means for programming into said programmable digital memory circuit module a subtract electrical runout signal for a given probe installation monitoring a given rotating shaft that is synchronized with a tachometer signal from the rotating shaft.

clock means synchronized to the tachometer signal for providing a sequence of output counts,

address means for accessing said digital memory in response to said output counts providing the digital subtract runout signal,

D to A converter means for converting said digital subtract runout signal to an analog subtract runout signal,

Subtract means for receiving said composite signal and said analog subtract runout signal and subtracting said analog subtract runout signal from said composite signal,

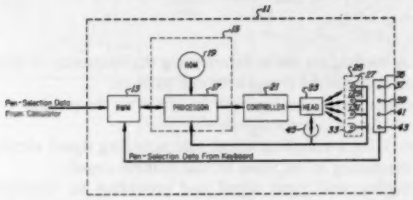
and said memory circuit module being selectively removable from said circuit and replaceable by another memory circuit module pre-programmed with a subtract runout signal for another given rotating shaft installation.

4,135,245

PLOTTER WITH AUTOMATIC PEN-CHANGER

Richard M. Kemplin, Poway; Richard N. Tverdoch, Solana Beach, and Larry W. Hennessee, San Diego, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jan. 4, 1977, Ser. No. 756,680
Int. Cl.[2] G06F *15/46*
U.S. Cl. 364—520 **17 Claims**



1. Apparatus having a head means for fetching a member from a repository, the apparatus comprising:

a repository having a predetermined number of stations, each station being configured to be engaged by the head means and to store one member;

memory means for receiving and storing applied input data values, each data value representing a selected station from which a member is to be fetched;

processing means coupled to the memory means for providing position coordinates to which the head means is to be moved for fetching a member from the selected station;

control means coupled to the processing means for moving the head means to the position coordinates provided by the processing means; and

head means coupled to the control means and configured to hold at least one member and to engage the selected station and a member stored in said station for fetching the stored member by movement of the head means to the position coordinates.

4,135,246

INTEGRATED HISTORY RECORDER FOR GAS TURBINE ENGINES

William T. McMannis, Springdale, Ohio, assignor to General Electric Company, Lynn, Mass.

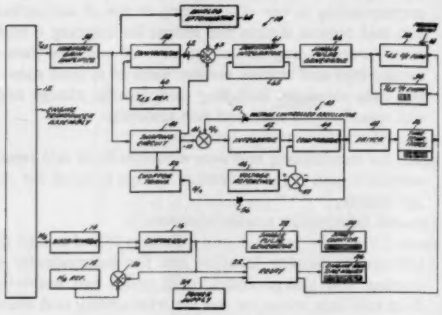
Filed Dec. 13, 1976, Ser. No. 750,065
Int. Cl.[2] G01M *15/00*
U.S. Cl. 364—551 **10 Claims**

1. A history recorder for providing a record of the duty performed by a gas turbine wherein said recorder includes a plurality of integrally controlled displays each providing a display of a unique factor determinative of the duty performed by the engine, the invention comprising:

means for displaying accumulated engine run time;

means for generating an engine speed signal indicative of engine speed; and

comparator means for comparing said engine speed signal with first and second reference speed signals, said first reference speed signal being indicative of a reference speed greater than said second reference speed, said comparator means operative to provide an output signal initiated in response to a comparison of said first reference signal with said engine speed signal and terminated in response to a comparison of said second reference signal with said engine speed signal, said engine run time display



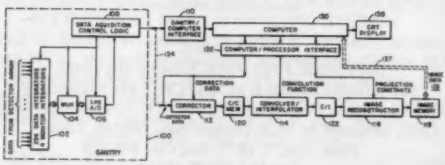
means providing a run time indication in response to said output signal.

4,135,247

TOMOGRAPHY SIGNAL PROCESSING SYSTEM

Bernard M. Gordon, Magnolia; Leopold Neumann, Lexington, and John McG. Dobbs, Arlington, all of Mass., assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 15, 1977, Ser. No. 824,632
Int. Cl.[2] G01T *1/16*; G06F *15/52*
U.S. Cl. 364—414 **68 Claims**



1. In a tomography system for exposing a body to radiation to provide image data representative of the density of the body in a cross-sectional plane, of the type having: source means for providing radiation passing through the body; detector means for receiving the radiation passing through the body along a plurality of paths and for providing output signals representative of radiation intensity received; and scanning means for providing for rotation of the source and detector means with respect to said body and for periodically causing emission of radiation from the source means during said rotation to provide a scan having a plurality of projections at a corresponding plurality of projection angles;

the tomography processor comprising:

corrector means for correcting the output signals from the detector means to provide corrected data points, each representative of a line integral of the density of the body along the path traversed by the radiation producing the corresponding detector means output signal;

first memory means for storing the corrected data points from a projection and for retrieving the stored, corrected data points from a projection at a later time;

convolver means for convolving with a deblurring function the corrected data points from a projection, retrieved by the first memory means, to produce a plurality of convolved data points from a projection;

second memory means, coupled to the convolver means, for storing the convolved data points from a projection and for retrieving the stored, convolved data points from a projection at a later time;

image memory means for storing data representative of the density of the body in said cross-sectional plane and hav-

ing a plurality of memory locations each for storing a value representative of the density of a corresponding area of the body in said cross-sectional plane;

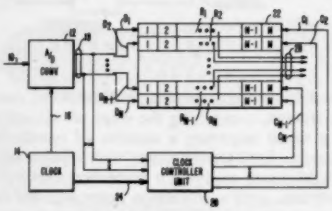
reconstructor means, coupled to said second memory means, and operative in response to data retrieved by said second memory means, for back-projecting the convolved data points from a projection by determining the corresponding convolved data point for each location in image memory and adding data derived from the corresponding convolved data point to the value stored in that location in image memory.

4,135,248

MEDIAN EXTRACTOR

Nathan Bluzer, Silver Spring, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 11, 1977, Ser. No. 841,238
Int. Cl.[2] G06F *15/36*
U.S. Cl. 364—575 **21 Claims**



1. A system for processing a set of M data values to extract a desired threshold value therefrom, said system comprising:

means for converting each data value into a base-one coded digital word having a capacity of N-bit levels;

an M-stage shift register for each of said N levels of base-one code, said N number of M-stage shift registers being aligned in N rows and M columns to form a memory bank for storage of each of said M digital words in one of its M columns;

means for arranging the bit pattern of said memory bank upon storage of each digital word by performing a shifting operation on selected shift register rows, said selection of which being based on the base-one coded digital word ready for storage in the memory bank, said bit pattern arrangement of said memory bank rendering an ordered set of the digital words in relation to the magnitude thereof; and

means for tapping the shift register stages of at least one predetermined column of said memory bank for extracting the digital words stored therein, whereby the extracted digital word may be, at times, representative of said desired threshold value of said ordered set of M data values.

4,135,249

SIGNED DOUBLE PRECISION MULTIPLICATION LOGIC

John M. Irwin, Clay, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jun. 29, 1977, Ser. No. 811,193
Int. Cl.[2] G06F *2/52*
U.S. Cl. 364—758 **12 Claims**

1. Apparatus for signed multiplication of two numbers to obtain a four quadrant double precision product in two's complement notation, each quantity being in serial form with the least significant bit first and accommodating a multiplier in two's complement, or unsigned notation and a multiplicand in two's complement or unsigned notation and in one of a plurality of word lengths, said apparatus comprising:

(a) a multiplier register to which the multiplier bit stream of "n" bit words is supplied, each output tap of which selects and stores a successively later multiplier bit from each word for formation of a partial product,

(b) a multiplicand shift register to which the multiplicand bit stream of "m" bit words is supplied having a plurality of output taps at one bit intervals,

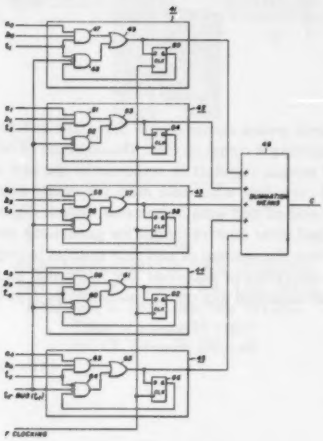
(c) a timing shift register in which a timing waveform is applied having a plurality of output taps at one bit intervals, said timing waveform having a first portion whose duration is set equal to "m" bit times for accommodating an "m" bit multiplicand word and having a second alternate portion set equal to the "n" bit times of a multiplier word,

(d) a plurality of partial product selectors for forming separate partial products,

(i) the "i^{th}" selector having

(1) a first input connected to an i^{th} output tap at the multiplier register for response to the "i^{th}" multiplier bit,

(2) a second input connected to an output tap of said multiplicand register for entry of the i^{th} multiplicand, delayed in correspondence with the significance of the multiplier bit entered,



(3) a third input connected to an output tap on said timing register for application of a delayed timing waveform (t_i) having said first portion delayed to coincide with said i^{th} multiplicand, and

(4) a fourth input to which said timing waveform is applied at a predetermined delay (t_r) for halting sign extension and defining the bit times of the partial product word,

(ii) said i^{th} selector producing a partial product which consists of the shifted i^{th} multiplicand gated by the i^{th} multiplier bit preceded by zero or more zeros and succeeded by one or more extensions of the last or sign bit, and

(e) a summation network in which all said partial products are combined, including means for negating said last partial product if a multiplier sign bit denoting a negative multiplier is entered in said last partial product selector, said summation network consolidating the bit streams representing said sign extended partial products into a sigle bit stream to form a double precision product.

4,135,250

SYSTEM FOR CLEARING INPUT DATA IN ELECTRONIC COMPUTER

Reiji Hirano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1977, Ser. No. 760,256
Claims priority, application Japan, Jan. 28, 1976, 51-8094
Int. Cl.[2] G06F *15/02, 15/32*
U.S. Cl. 364—900 **3 Claims**

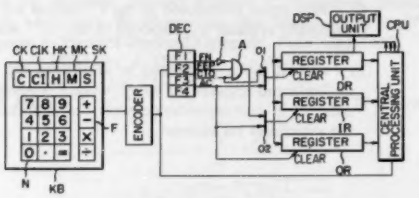
1. A system for clearing input data in an electronic apparatus comprising:

input means having numeral keys, functional keys, data instruction keys, and a clear key;

output means for outputting the numeral data entered from said input means;

storage means for storing the numeral data entered from said input means, said storage means including a first register coupled to said output means, and a second register; and

clear control means including memory means, said clear control means comprising a first clear control circuit for generating a signal to clear the contents of both said first and second registers in response to the key operation of said clear key when said memory means memorizes that any one of said data instruction keys is depressed, and a second clear control circuit for generating another signal to clear the content of said first register in response to the key operation of said clear key when said memory means memorizes that any one of said numeral keys is depressed.



4,135,251

METHOD FOR CODED SEQUENTIAL NON-COHERENT, REDUNDANT OPTICAL DATA-STORAGE

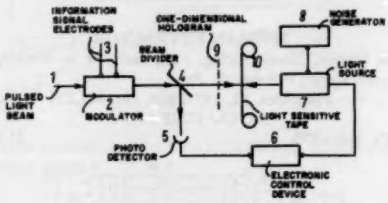
Hartwig Ruell, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 12, 1973, Ser. No. 342,301

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1972, 2214396

Int. Cl.[2] G02B 5/32; G03H 1/18, 1/10, 1/26

U.S. Cl. 365—216 5 Claims

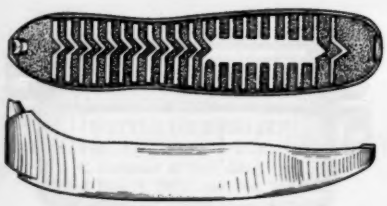


1. A method for coded, sequential, non-coherent, redundant, optical data storage, comprising the steps of: sequentially recording in a timed sequence a number of one-dimensional holograms upon a light-sensitive tape with a pulse amplitude-modulated light beam; applying a correction exposure of the light-sensitive tape with a correction beam separate from the signal exposure with respect to space and time to provide an entire exposure which is constant during each recording; and modulating one of the beams with a noise signal with respect to time to provide a contrast of the individual recorded holograms which statistically varies.

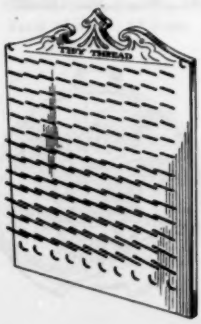
DESIGNS

JANUARY 16, 1979

250,796
SKI BOOT ATTACHMENT
Michael D. DeFever, 5511 W. Parkview Dr., Mequon, Wis. 53092
Filed Oct. 13, 1976, Ser. No. 732,116
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—314

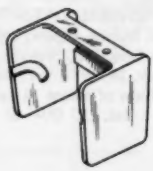


250,797
SPOOL HOLDER
Shirley Dunegan, Rte. 3, Box 260B, Malvern, Ark. 72104
Filed Jan. 19, 1978, Ser. No. 871,119
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D3—19 D



250,798
ARMCHAIR
Peter S. Stamberg, 46 Mayfair Dr., Huntington, N.Y. 11743
Filed May 3, 1977, Ser. No. 793,463
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

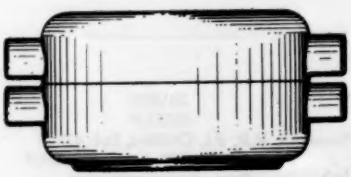
250,799
REELED GARBAGE BAG HOLDER
James A. Schad, 13291 N. Saginaw Rd., Clio, Mich. 48420
Filed Jan. 6, 1977, Ser. No. 757,312
Term of patent 14 years
Int. Cl. D6—*04*; D7—*99*
U.S. Cl. D6—113

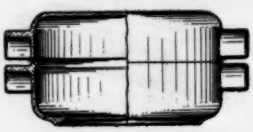


250,800
SHELF
Floyd Trossman, R.R. #1, Guilford, Ind. 47022
Filed Jul. 8, 1977, Ser. No. 813,835
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—132

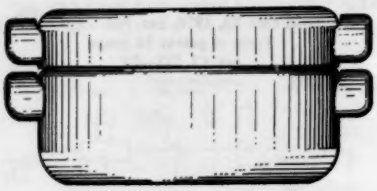
250,801
DISPLAY STAND
Sheldon L. Bergen, 128 N. 22nd Ave., W., Duluth, Minn. 55806, and Dale R. Botten, 1507-1/2 N. 5th St., Superior, Wis. 54880
Filed Oct. 15, 1976, Ser. No. 733,426
Term of patent 7 years
Int. Cl. D6—*99*; D9—*03*; D20—*02*
U.S. Cl. D6—172

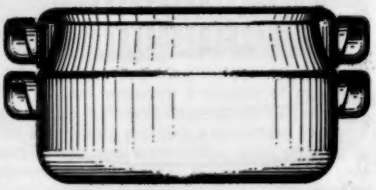
250,802
COVERED OVEN POT
Inger M. Elliott, and Helena Uglow, both of New York, N.Y., assignors to China Seas, Inc., New York, N.Y.
Filed Feb. 24, 1977, Ser. No. 771,834
Term of patent 14 years
Int. Cl.[2] D7—*02*
U.S. Cl. D7—97



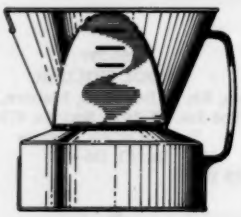


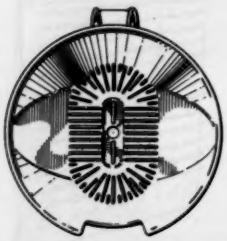
250,803
COVERED CASSEROLE
Inger M. Elliott, and Helena Uglow, both of New York, N.Y., assignors to China Seas, Inc., New York, N.Y.
Filed Feb. 24, 1977, Ser. No. 771,835
Term of patent 14 years
Int. Cl.[2] D7—*02*
U.S. Cl. D7—97



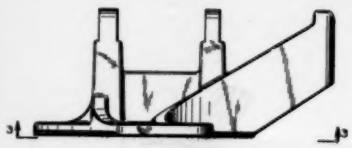


250,804
CUP-MOUNTED HOLDER FOR COFFEE FILTER PAPER
Stig G. N. R. Nilsson, Kattarp, Sweden, assignor to Perstorp AB, Perstorp, Sweden
Filed Mar. 3, 1977, Ser. No. 773,922
Claims priority, application Sweden, Sep. 15, 1976, 76-1786
Term of patent 14 years
Int. Cl.[2] D7—*04*
U.S. Cl. D7—129



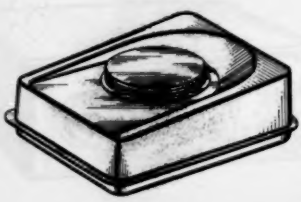


250,805
ALTERNATOR BRACKET FOR VEHICLES
Paul N. Mygind, 5567 Airways Ave., Fresno, Calif. 93727, and Floyd E. Gross, 6468 N. 7th St., Fresno, Calif. 93710
Filed Mar. 7, 1977, Ser. No. 775,270
Term of patent 14 years
Int. Cl.[2] D8—*08*
U.S. Cl. D8—380



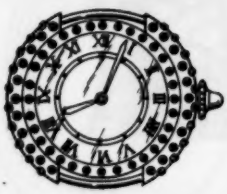
250,806
BOTTLE OR THE LIKE
Ronald R. Gutkowski, 3625 Waterbury La., Racine, Wis. 53403, assignor to S. C. Johnson & Son, Inc.
Filed Feb. 7, 1977, Ser. No. 766,158
Term of patent 14 years
Int. Cl.[2] D9—*01*
U.S. Cl. D9—39

250,807
TOWELETTE DISPENSER
Howard H. McIlvain, Cincinnati, Ohio, assignor to Drackett Company
Filed Feb. 22, 1977, Ser. No. 770,729
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—239

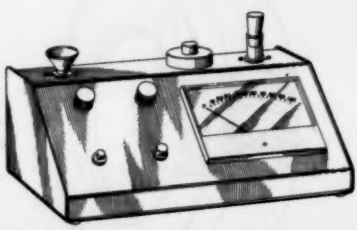


250,808
CLOCK
Harold E. Johnson, 205 Beechwood Pass, Gadsden, Ala. 35901
Filed Sep. 20, 1976, Ser. No. 724,481
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—6

250,809
WATCH
Alain D. Perrin, Rueil-Malmaison, France, assignor to Cartier International B.V., France
Filed Sep. 14, 1976, Ser. No. 723,054
Claims priority, application France, Mar. 15, 1976, 76 74640
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—39

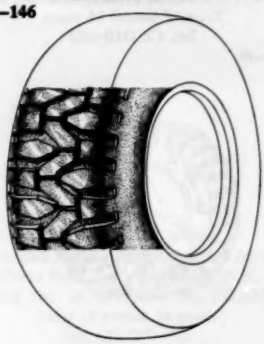


250,810
COLORIMETER
David L. Stern, Baltimore, Md., assignor to The Baltimore Spice Company, Baltimore, Md.
Filed Jun. 2, 1977, Ser. No. 802,602
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

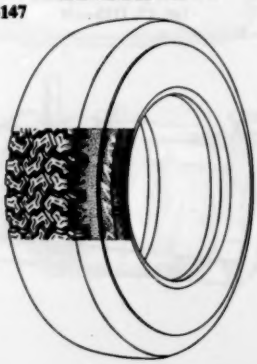


250,811
THERMOCHROMIC THERMOMETER
David L. Fuller, 1110 Mountain Creek Trail, NW., Atlanta, Ga. 30328, and Bryan T. Moss, 5282 Meadowcreek Dr., Dunwoody, Ga. 30338
Filed Mar. 28, 1977, Ser. No. 781,662
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—57

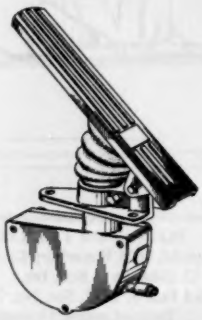
250,812
TIRE
Ethel L. Duncan, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company
Filed Jun. 22, 1977, Ser. No. 808,769
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



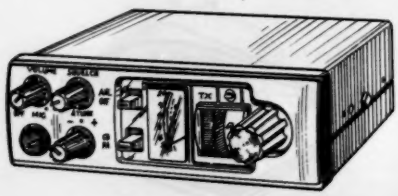
250,813
TIRE
Harold D. Fetty, Birmingham, Mich., and Charles G. Yurkovich, Boardman, Ohio, assignors to The Goodyear Tire & Rubber Company
Filed Jun. 23, 1977, Ser. No. 809,223
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147



250,814
VEHICLE PEDAL CONTROL UNIT
Jack Dartnall, Diplocks Way, South Rd., Hailsham, East Sussex BN27 3JF, England
Filed Feb. 17, 1977, Ser. No. 769,842
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—174



250,815
TRANSCEIVER
Lawrence L. Yanitz, 6630 Red Cedar La., Union Lake, Mich. 48085
Filed Jun. 7, 1976, Ser. No. 693,379
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68

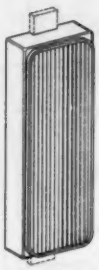


250,816

PHOTOFLASH LAMP UNIT

Russell W. Chipner, South Euclid; Donald R. Schindler, Burton, and Peter L. Sheilko, Chagrin Falls, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,457
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42

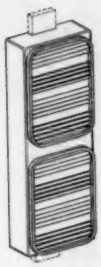


250,818

PHOTOFLASH LAMP UNIT

Russell W. Chipner, South Euclid; Donald R. Schindler, Burton, and Peter L. Sheilko, Chagrin Falls, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,459
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42

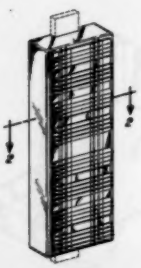


250,817

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,458
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42



250,819

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

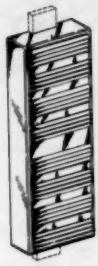
Filed May 25, 1977, Ser. No. 800,461
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42

250,820

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,462
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42



250,821

PHOTOFLASH LAMP UNIT

Russell W. Chipner, South Euclid; Donald R. Schindler, Burton, and Peter L. Sheliko, Chagrin Falls, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,464
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42

250,822

PHOTOFLASH LAMP UNIT

Donald R. Schindler, Burton, and Thomas F. Soules, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1977, Ser. No. 800,466
Term of patent 14 years
Int. Cl. D16—*05;* D26—*05*
U.S. Cl. D16—42

250,823

COMBINED DESK TRAY AND HOLDER FOR FLAT ARTICLES

Edmond E. Theobald, Lymington, England, assignor to Top Secret Limited, Hampshire, England

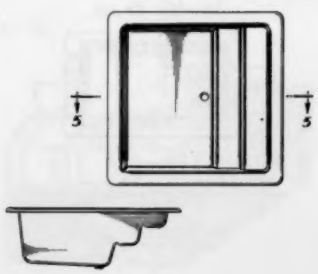
Filed Dec. 10, 1976, Ser. No. 749,266
Claims priority, application United Kingdom, Jun. 23, 1976, 976207/76
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—75

250,824
KNIFE SCABBARD
George T. Bowers, Basking Ridge, N.J., assignor to Atlantic Service Company, Inc., Brooklyn, N.Y.
Filed Jan. 3, 1977, Ser. No. 756,366
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D22—14

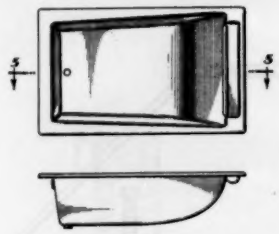
250,825
WORM HOOK
Lewis Childre, Foley, Ala., assignor to Lew Childre & Sons, Inc.
Filed May 20, 1977, Ser. No. 798,996
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

250,826
WATER SWEEPER
C. Ray Newman, Houston, Tex., assignor to Rol-Dri, Inc., Houston, Tex.
Filed Dec. 15, 1976, Ser. No. 750,939
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—35

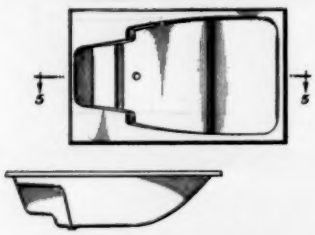
250,827
BATHTUB
Philippe J. H. Clement, 104 S. Robertson Blvd., Los Angeles, Calif. 90048
Filed Oct. 19, 1977, Ser. No. 843,741
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



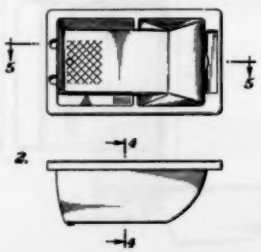
250,828
BATHTUB
Philippe J. H. Clement, 104 S. Robertson Blvd., Los Angeles, Calif. 90048
Filed Oct. 19, 1977, Ser. No. 843,742
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55



250,829
BATHTUB
Philippe J. H. Clement, 104 S. Robertson Blvd., Los Angeles, Calif. 90048
Filed Oct. 19, 1977, Ser. No. 843,743
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

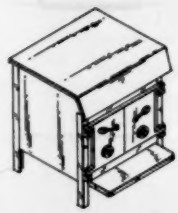


250,830
BATHTUB
Philippe J. H. Clement, 104 S. Robertson Blvd., Los Angeles, Calif. 90048
Filed Oct. 19, 1977, Ser. No. 843,744
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—55

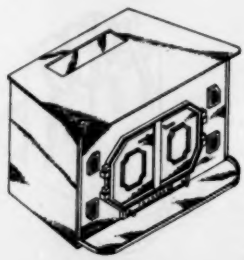


250,831
PORTABLE SINK OR THE LIKE
Salvatore Scotto, 1344 75th St., Brooklyn, N.Y. 11228
Filed Aug. 12, 1977, Ser. No. 823,971
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—61

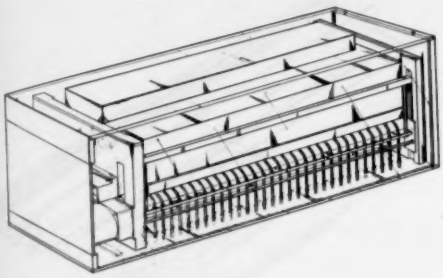
250,832
WOODBURNING STOVE
Martin Leach, Grandview Ave., Cornwall-on-Hudson, N.Y. 12520
Filed Jun. 20, 1977, Ser. No. 808,321
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



250,833
STOVE
James W. Loftis, 4 Rodney Ave., Greenville, S.C. 29609, and James M. Bridwell, Rte. 2 Tanner Rd., Taylors, S.C. 29687
Filed Aug. 22, 1977, Ser. No. 826,885
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97

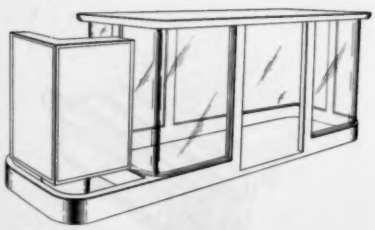


250,834
ANALYSIS STATION FOR MULTICHANNEL AUTOMATED APPARATUS FOR ANALYSIS OF CHEMICAL SAMPLES
Johannes W. Ruppert, Houston, Tex., assignor to Hycel, Inc., Houston, Tex.
Filed Apr. 5, 1978, Ser. No. 893,544
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—1.1

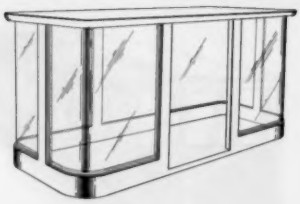


250,835
BACK MASSAGER ATTACHMENT
Clifford E. Grube, Niles, Ill., assignor to Associated Mills, Inc., Chicago, Ill.
Filed Aug. 17, 1977, Ser. No. 825,268
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

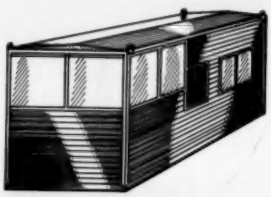
250,836
COMBINED SHELTER AND FLOWER STAND
Guy Lahaie, 1316 Green St., Longueuil, Quebec, Canada (J4K 1T7)
Filed May 2, 1977, Ser. No. 793,172
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1



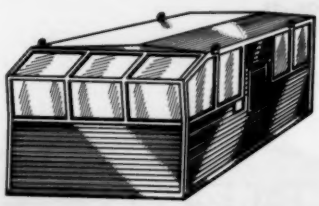
250,837
SHELTER
Guy Lahaie, 1316 Green St., Longueuil, Quebec, Canada (J4K 1T7)
Filed May 2, 1977, Ser. No. 793,173
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—1



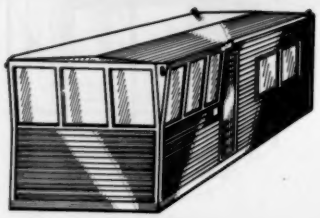
250,838
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Jun. 3, 1977, Ser. No. 803,389
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



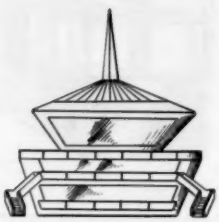
250,839
ASPHALT PLANT CONTROL HOUSE
Richard F. Chambers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Jun. 3, 1977, Ser. No. 803,390
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



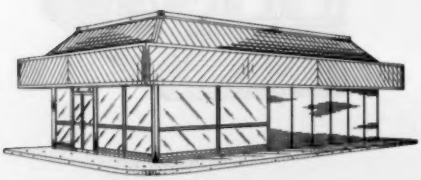
250,840
ASPHALT PLANT CONTROL HOUSE
Richard F. Chamers, 8431 Dayton Pike, Daisy, Tenn. 37319
Filed Jun. 3, 1977, Ser. No. 803,391
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—22



250,841
ULTRA MODERN SOLAR BUILDING
Daniel Reyes, 233 Broadway, New York, N.Y. 10007
Filed Jun. 30, 1977, Ser. No. 811,787
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—23

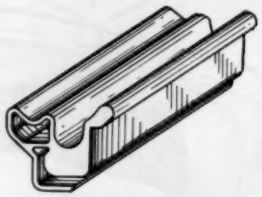


250,842
FAST SERVICE RESTAURANT BUILDING
D. Pat. Fraley, Richardson, Tex., assignor to Church's Fried Chicken, Inc., San Antonio, Tex.
Filed May 9, 1977, Ser. No. 794,752
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25

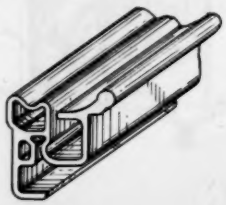


250,843
FRAMING MEMBER FOR WINDOWS AND THE LIKE
James G. Mauro, 410 Decatur Ave., Pittsburgh, Pa. 15221
Filed Feb. 16, 1977, Ser. No. 768,955
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

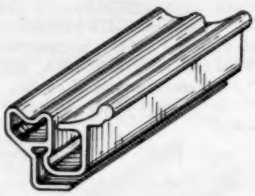
250,844
SEALING GASKET
Robert L. Rauh, Holly, and Nick A. Marinelli, Brighton, both of Mich., assignors to Hurst Performance, Inc., Warminster, Pa.
Filed May 11, 1977, Ser. No. 795,713
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



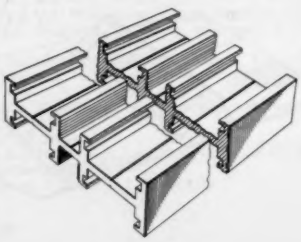
250,845
SEALING GASKET
John J. Juratovic, Hazel Park, Mich., and William R. Widemer, Churchville, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.
Filed May 11, 1977, Ser. No. 795,714
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



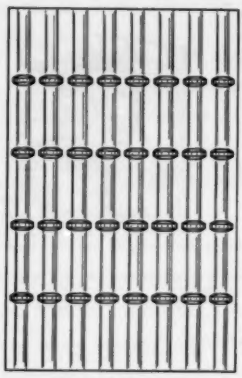
250,846
SEALING GASKET
John J. Juratovic, Hazel Park, Mich., and William R. Widdemer, Churchville, Pa., assignors to Hurst Performance, Inc., Warminster, Pa.
Filed May 11, 1977, Ser. No. 795,715
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74



250,847
EXTRUDED STRUCTURAL ELEMENT FOR BUILDINGS
Jean-Marc Lemieux, 1621 Bergerac St., Vimont, Laval, Quebec, Canada
Filed Aug. 8, 1977, Ser. No. 822,937
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—75

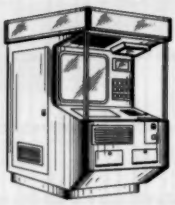


250,848
ROOF PANEL
Gustav Näslund, Pl. 687, S-942 00, Älvsbyn, Sweden
Filed Jan. 3, 1977, Ser. No. 756,151
Claims priority, application Sweden, Jul. 6, 1976, 761419
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—96

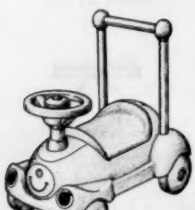


250,849
RAZOR
Russell P. Harshberger, P.O. Box 601, Pasadena, Calif. 91102
Filed Oct. 4, 1976, Ser. No. 728,982
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—46

250,850
AMUSEMENT FORTUNE TELLING MACHINE OR THE LIKE
Paul F. Osborne, Jr., Dallas, Tex., assignor to Duce and Company, Dallas, Tex.
Filed Apr. 22, 1977, Ser. No. 789,777
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—5 L

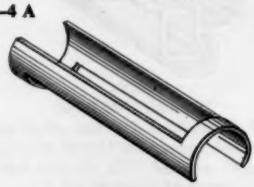


250,851
TOY VEHICLE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Taira Hanashima, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Nov. 17, 1976, Ser. No. 742,479
Claims priority, application Japan, May 19, 1976, 51-18559
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ



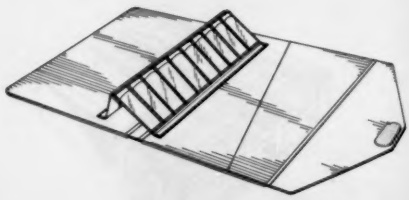
250,852
TOY AIRPLANE
William J. Maloney, II, East Aurora, N.Y., assignor to The Quaker Oats Company, Chicago, Ill.
Filed Dec. 9, 1976, Ser. No. 749,018
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 HH

250,853
FLASHLIGHT STAND
James L. Fund, P.O. Box 255451, Sacramento, Calif. 95825
Filed Oct. 8, 1976, Ser. No. 730,934
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—4 A



250,854
LAMP
William P. Heinrich, McHenry, Ill., assignor to Stylette Plastics, Inc., Oakdale, Pa.
Filed Sep. 29, 1976, Ser. No. 727,979
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—20 F

250,855
CASE FOR WRITING INSTRUMENTS
Lasar Gotz, Don Mills, Canada, assignor to Weldo Plastics Limited, Toronto, Canada
Filed Jun. 9, 1976, Ser. No. 694,106
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JANUARY, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-Betong Aktiebolag: *See*—
Sjolander, Carl J. O., 4,134,244, Cl. 52-763.000.

A. H. Robins Company, Incorporated: *See*—
Greenberg, Jack, 4,134,977, Cl. 424-78.000.

A/S Akers Mek. Verksted: *See*—
Thunes, Odd, 4,134,702, Cl. 405-195.000.

AB Celleco: *See*—
Frykhult, Rune H., 4,134,827, Cl. 209-211.000.

Abdallah, Abdulmuniem H.; and Shea, Philip J., to Dow Chemical Company, The. Naphthalene acetamidines as anxiolytic antidepressants. 4,134,992, Cl. 424-326.000.

Abe, Hajime: *See*—
Yamaji, Kenkichi; Dietrich, Oelhschlagel; Abe, Hajime; and Tamura, Koichi, 4,134,196, Cl. 29-420.000.

Abendroth, Paul: *See*—
Emrich, Helmut; and Abendroth, Paul, 4,134,582, Cl. 271-237.000.

Aberle, Leonard J.: *See*—
Kim, Dong W.; and Aberle, Leonard J., 4,134,191, Cl. 28-248.000.

Abernethy, Robert R.; and Bishop, James G. Wattage reducing device for fluorescent fixtures. 4,135,115, Cl. 315-97.000.

Access Control Systems Pty Ltd.: *See*—
Hopkinson, Dennis, 4,134,539, Cl. 235-449.000.

Adachi, Masaharu: *See*—
Kawai, Yukio; and Adachi, Masaharu, 4,134,596, Cl. 277-152.000.

Adachi, Rensuke: *See*—
Sugiyama, Takahiro; Kubota, Toshifumi; and Adachi, Rensuke, 4,134,645, Cl. 350-216.000.

Adachi, Yoshiaki: *See*—
Matsumoto, Noboru; Nakashima, Mikio; Kokubo, Humihiro; Nakamura, Yukio; and Adachi, Yoshiaki, 4,134,263, Cl. 60-293.000.

Adams, Calvin K.; Goldstein, Mark K.; Hall, Deborah C.; Hench, Larry L.; Madden, Michael C.; Pennypacker, Henry S., Jr.; and Stein, Gerald H. Breast cancer detection training system. 4,134,218, Cl. 35-17.000.

Addressograph-Multigraph Corporation: *See*—
Patzke, Robert C.; and DeRyke, Thomas V., 4,134,522, Cl. 222-153.000.

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Adlerwerke vorm. Heinrich Kleyer A.G.: *See*—
Stuiber, Walter; and Wenderoth, Karl, 4,134,694, Cl. 400-293.000.

Aerotherm, Inc.: *See*—
Houser, John E., 4,134,731, Cl. 195-127.000.
Houser, John E.; and Kramer, Ralph J., 4,134,749, Cl. 71-9.000.

Aerwey Laboratories, Inc.: *See*—
Sherman, Robert M., 4,134,940, Cl. 261-124.000.

Ag Superior, Inc.: *See*—
Scheffler, Edward D., 4,134,250, Cl. 56-328.00R.

AGFA-Gevaert AG: *See*—
Laar, Erwin; and Ganser, Friedrich, 4,134,663, Cl. 354-298.000.
Schnall, Gunther; Schlick, Erich; and Blochl, Hanns, 4,134,667, Cl. 355-3.0DR.

Ahrenskou-Sorensen, Borge, to Svenska Skandex AB. Mixing apparatus. 4,134,689, Cl. 366-110.000.

Aichi Spinning Co., Ltd.: *See*—
Handa, Kiyoyasu; and Yuzuriha, Hiroaki, 4,134,253, Cl. 57-96.000.

Air Industries: *See*—
Hanrahan, James R., Jr.; and Levine, Richard G., 4,134,955, Cl. 264-244.000.

Air Products and Chemicals, Inc.: *See*—
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,134,994, Cl. 260-501.110.

Airway Industries, Inc.: *See*—
Davis, Michael, 4,134,480, Cl. 190-58.00B.

Aisin Seiki Kabushiki Kaisha: *See*—
Ishikawa, Kazuo, 4,134,313, Cl. 74-867.000.

Akai, Wataru: *See*—
Okano, Hiroshi; and Akai, Wataru, 4,134,308, Cl. 74-411.000.

Akashi, Goro; Fujiyama, Masaaki; and Utumi, Masahiro, to Fuji Photo Film Co., Ltd. Magnetic recording substance. 4,135,031, Cl. 428-323.000.

Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,135,032, Cl. 428-328.000.

AKG Akustische u. Kino-Gerate Gesellschaft m.b.H.: *See*—
Cech, Karl, 4,134,493, Cl. 206-45.190.

Aktiebolaget Bofors: *See*—
Asp, Borje; and Martinsson, John-Erik, 4,134,328, Cl. 89-1.817.

Aktiebolaget Platmanufaktur: *See*—
Sundberg, Sture, 4,134,892, Cl. 206-303.000.

Akzo N.V.: *See*—
Burley, Joseph W.; Hutton, Ronald E.; and Oakes, Vincent, 4,134,878, Cl. 260-45.75S.

Alco Standard Corporation: *See*—
Kastilahn, William W.; Garrett, Robert R.; and Park, Vernon L., 4,135,053, Cl. 13-25.000.

Alcudia Empresa Para la Industria Quimica, S.A.: *See*—
Tapia, Graciano J., 4,134,875, Cl. 260-42.460.

Alden Research Foundation: *See*—
Kurland, Jeffrey B.; and Miller, Albert W., 4,135,199, Cl. 346-165.000.

Aldridge, Clyde L.: *See*—
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,134,825, Cl. 208-108.000.

Alexander, William. Fluid flow force and direction transducer system. 4,134,295, Cl. 73-189.000.

Allen, Cloy L. Growth measuring scale. 4,134,212, Cl. 33-169.00R.

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Roberts, Stanley M., 4,134,911, Cl. 260-448.80R.

Allen, James H., to Smith International, Inc. Air lift system for large diameter borehole drilling. 4,134,463, Cl. 175-53.000.

Allen Organ Company: *See*—
Markowitz, Jerome, 4,134,323, Cl. 84-1.270.
Woron, Robert P., 4,134,321, Cl. 84-1.220.

Allen, Reginald A., to TRW, Inc. Regenerator circuit. 4,135,104, Cl. 307-221.00D.

Allen, Wallace B.; Harrell, John W.; and Webster, William W., to Mobil Oil Corporation. Method for selecting a demulsifier for breaking a water-in-oil emulsion. 4,134,799, Cl. 204-1.00T.

Allied Chemical Corporation: *See*—
Kim, Dong W.; and Aberle, Leonard J., 4,134,191, Cl. 28-248.000.
Marshall, Robert M., 4,134,839, Cl. 252-8.600.
Ray, Ranjan; and Hasegawa, Ryusuke, 4,134,779, Cl. 148-121.000.

Alsthom-Atlantique: *See*—
Bourdon, Bernard, 4,134,817, Cl. 204-192.00E.

Alston, Robert B.: *See*—
Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,134,415, Cl. 137-13.000.

Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., to Pfizer Inc. Pyrimidal [2,3,D]pyrimidin-4(3H)-ones as antiallergy agents. 4,134,981, Cl. 424-251.000.

Aluminum Company of America: *See*—
Yang, Ralph T., 4,134,737, Cl. 44-1.00R.

Amberger Kaolinwerke GmbH: *See*—
Trawinski, Helmut F., 4,134,828, Cl. 209-211.000.

American Cyanamid Company: *See*—
Asato, Goro, 4,134,899, Cl. 260-332.20R.
Ross, Lawrence J.; and Chiarello, George A., 4,134,917, Cl. 260-577.000.
Sloboda, Adolph E., 4,134,990, Cl. 424-304.000.

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Fisher, Kenneth J., 4,135,231, Cl. 362-269.000.

Amerock Corporation: *See*—
Stevens, Richard G., 4,134,178, Cl. 16-100.000.

Ameron, Inc.: *See*—
Peppel, George W., 4,134,569, Cl. 249-179.000.

AMP Incorporated: *See*—
Conrad, Jack S.; Granitz, Richard F.; and Lockard, Joseph L., 4,134,631, Cl. 339-17.00M.
Kourimsky, Friedrich J. A., 4,135,226, Cl. 361-415.000.

Anderson, Larry L.: *See*—
Wood, Ralph E.; Wiser, Wendell H.; Anderson, Larry L.; and Oblad, Alex G., 4,134,822, Cl. 208-10.000.

Andersson, Maj Agnes: *See*—
Lagher, Gunnar H., 4,134,540, Cl. 236-34.500.

Anheuser-Busch, Incorporated: *See*—
Schuldt, Erich H., Jr., 4,135,000, Cl. 426-60.000.

Anthony, Thomas R.; and Cline, Harvey E., to General Electric Company. Semiconductor element embodying an optical coating to enhance thermal gradient zone melting processing thereof. 4,135,027, Cl. 428-195.000.

Aonuma, Masashi: *See*—
Ogawa, Hiroshi; Nakamura, Matsuaki; Aonuma, Masashi; and Tamai, Yasuo, 4,135,016, Cl. 428-64.000.

Appel, Adolf; and Reymann, Wolfgang, to Gildemeister Corpoplast GmbH. Method for blow molding hollow articles, in particular bottles. 4,134,950, Cl. 264-523.000.

Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., to Goodyear Tire & Rubber Company, The. Tire building system. 4,134,783, Cl. 156-396.000.

Arai, Haruhiko: *See—*
Minegishi, Yutaka; and Arai, Haruhiko, 4,134,840, Cl. 252-8.900.

Araki, Kunio; Makuuchi, Keizo; and Takagi, Tohru, to Japan Atomic Energy Research Institute. Process for preparing a heat-curable polymer emulsion using high energy radiation. 4,134,810, Cl. 204-159.150.

Araki, Kunio: *See—*
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.

Arcamone, Federico: *See—*
Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, 4,134,903, Cl. 260-365.000.

Arce, Oscar A. Disposable toothbrush. 4,134,172, Cl. 15-167.00R.

Arco Polymers, Inc.: *See—*
Harris, James J.; and Hammond, Richard E., 4,135,046, Cl. 526-137.000.

Arena, Joseph C. Golf swing training device and method. 4,134,589, Cl. 273-183.00B.

Argentieri, Michael A.; and Lionetti, James G., to Intercontinental Dynamics Corporation. Aircraft altitude annunciator. 4,135,143, Cl. 340-27.00R.

Argus Chemical Corporation: *See—*
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Tsuruga, Kouji, 4,134,868, Cl. 260-23.0XA.

Armanini, Louis: *See—*
Rieger, Carl J.; and Armanini, Louis, 4,134,776, Cl. 106-291.000.

Armbruster, Joseph M. Flashlight. 4,135,230, Cl. 362-206.000.

Armstrong, James E., to Pool Company. Modular section mast. 4,134,237, Cl. 52-118.000.

Arthur A. Collins, Inc.: *See—*
Bayless, Jon W., Sr.; Pedersen, Robert D.; and Bellamy, John C., II, 4,135,057, Cl. 178-67.000.

Artificial and Transplant Organs, Inc.: *See—*
Brous, Donald, 4,134,834, Cl. 210-127.000.

Arzet, Frederick R. Lawn watering system. 4,134,269, Cl. 405-37.000.

Arzoumanian, Aram S., to Dataproducts Corporation. Concave impact print hammers. 4,134,337, Cl. 101-93.090.

Asahi Denka Kogyo K.K.: *See—*
Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, 4,135,036, Cl. 428-413.000.

Asahi Glass Company Ltd.: *See—*
Oda, Yoshio; Uchida, Keiichi; and Morikawa, Shinsuke, 4,134,796, Cl. 203-63.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nomura, Katsuhiko, 4,134,657, Cl. 354-212.000.
Sugiyama, Takahiro; Kubota, Toshifumi; and Adachi, Rensuke, 4,134,645, Cl. 350-216.000.

Asakawa, Yutaka: *See—*
Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, 4,135,036, Cl. 428-413.000.

Asato, Goro, to American Cyanamid Company. Novel 4,5,6,7-tetrahydro-7-oxy(oxy)benzo [b]thiophen-4-amine compounds useful as animal growth regulants. 4,134,899, Cl. 260-332.20R.

Asayama, Akihiko: *See—*
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, 4,134,956, Cl. 264-256.000.

ASEA: *See—*
Nilsson, Bengt, 4,134,307, Cl. 74-66.000.

ASEA Aktiebolag: *See—*
Ling, Bernt; Persson, Anders; and Soderstrom, Sven-Erik, 4,134,677, Cl. 356-5.000.
Stenkvist, Sven-Einar; and Widell, Bjorn, 4,135,052, Cl. 13-11.000.

Asp, Borje; and Martinsson, John-Erik, to Aktiebolaget Bofors. Device for a missile. 4,134,328, Cl. 89-1.817.

Asquith, Anthony, to Girling Limited. Sliding caliper disc brakes. 4,134,477, Cl. 188-73.300.

Ateliers des Charmilles, S.A.: *See—*
Briffod, Jean-Paul, 4,134,807, Cl. 204-129.100.
Pfau, Jean; Wavre, Alain; and Schneider, Rudolf, 4,135,070, Cl. 219-69.00M.

Atherton, DeWitt T. Simultaneous plural-directional flow motor. 4,134,710, Cl. 416-117.000.

Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., to Hoffmann-La Roche Inc. Compositions having antibiotic properties. 4,134,972, Cl. 424-177.000.

Atkinson, David W.; Kuntz, Donald A.; and Sprick, William L., to Caterpillar Tractor Co. Sound suppressing engine mounting means. 4,134,561, Cl. 248-632.000.

Atlantic Richfield Company: *See—*
DeVries, Donald L.; and DeJovine, James M., 4,134,844, Cl. 252-30.000.
Kossack, Charles A., 4,134,618, Cl. 299-5.000.

Aubert, Gilles, to Commissariat a l'Energie Atomique. Method for refuelling a nuclear reactor and device for carrying out said method. 4,134,789, Cl. 176-30.000.

Auger, Robert H., to Saint-Gobain Industries. Assembly of shaped leaves. 4,134,238, Cl. 52-127.000.

Auracher, Franz; and Kersten, Ralf, to Siemens Aktiengesellschaft. Output/input coupler for multi-mode glass fibers. 4,134,640, Cl. 350-96.150.

Austel, Volkhard: *See—*
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.

Austin, Oliver K., to Phillips Petroleum Company. Carbon black process with inner and outer hot combustion gas entries providing protective blanket and extra hot gases for conversion of feed. 4,134,966, Cl. 423-456.000.

Automation Industries, Inc.: *See—*
Baur, Robert; and Iversen, Ralph, 4,134,634, Cl. 339-75.00M.

Avco Corporation: *See—*
Branen, Kenneth E.; and Gall, John J., 4,135,035, Cl. 428-377.000.

Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A.: *See—*
Baiocchi, Leandro; and Silvestrini, Bruno, 4,134,989, Cl. 424-308.000.

Baba, Mitsuru, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic record player of linear tracking pickup arm type. 4,135,086, Cl. 250-237.00G.

Babyanskas, Marionas A.: *See—*
Valjukas, Juozas B.; Babyanskas, Marionas A.; Zayanchkauskas, Pyatras A.; and Zhukauskene, Yanina I., 4,134,885, Cl. 260-112.00B.
Valjukas, Juozas B.; Babyanskas, Marionas A.; and Zayanchkauskas, Pyatras A., 4,134,886, Cl. 260-112.00B.

Backes, Herbert, to Kufner Textilwerke KG. Fabric web for production of reinforcing inserts for garments. 4,135,025, Cl. 428-195.000.

Badberg, Melvin C.; Hutchins, Thomas G.; Olsen, Roy W.; and Zachmeyer, James W., to Goodyear Tire & Rubber Company, The. Mandrel assembly for forming an internally vented filler neck hose. 4,134,784, Cl. 156-423.000.

Baer, Stephen C. Double bubble wheel engine. 4,134,264, Cl. 60-516.000.

Bahre, Werner; Stobaus, Karl H.; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshuette. Method of producing copper clad steel wire. 4,134,528, Cl. 228-115.000.

Bailey, Frank C.: *See—*
Gibson, Harry W.; Bailey, Frank C.; and Mincer, Joseph L., 4,134,760, Cl. 96-1.0SD.

Bailey Meter Company: *See—*
Bohl, Thomas L.; and Pocock, Robert E., 4,134,289, Cl. 73-23.000.

Baiocchi, Leandro; and Silvestrini, Bruno, to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A. Guaiacol p-isobutyl hydratropate. 4,134,989, Cl. 424-308.000.

Bajwa, Balbir S.; Bhat, Sujata V.; Dornauer, Horst; and de Souza, Noel J., to Hoechst Aktiengesellschaft. Polyoxygenated labdane derivatives. 4,134,986, Cl. 424-283.000.

Baker, Charles J., to Royal Industries, Inc. Dumping apparatus for open top of vehicles. 4,134,503, Cl. 214-46.300.

Baker, John H., Jr., to Scott Paper Company. Method of making a nonwoven fabric. 4,134,948, Cl. 264-518.000.

Baker, Richard H., to Exxon Research & Engineering Co. Synthesizer circuit for generating three-tier waveforms. 4,135,235, Cl. 363-43.000.

Baldwin, Floyd G.; and Voorhees, Stanley V., to McDonnell Douglas Corporation. Retractable guide latch mechanism. 4,134,345, Cl. 105-366.00B.

Baldwin, John J., to Merck & Co., Inc. 3-Amino-2-OR-propoxyaryl substituted imidazoles. 4,134,983, Cl. 424-267.000.

Balke, Rodney W.; Oradat, Frank R.; and Haga, Cecil W., to Textron Inc. Flange spring reservoir for a vibration damper. 4,134,309, Cl. 74-573.00F.

Ball, Kenneth, to Vickers-Intertek Limited. Sub-sea well heads. 4,134,456, Cl. 166-356.000.

Balzer, David J., to Caterpillar Tractor Co. Brake apparatus including plural actuating assemblies. 4,134,478, Cl. 188-106.00P.

Bamsey, Robert G.; and van der Male, Dirk B., to Borg-Warner Corporation. Exhaust gas recirculation control valve and heat exchanger. 4,134,377, Cl. 123-119.00A.

Banszki, Miklos: *See—*
Dancso, Laszlo; Kocsis, Oliver; Horvath, Jeno; and Banszki, Miklos, 4,134,350, Cl. 112-110.000.

Banzai, Ltd.: *See—*
Ogura, Toshiaki; Saito, Toshio; Higashi, Hideo; and Yamazaki, Yoshimichi, 4,135,154, Cl. 324-16.00S.

Barchas, Richard K.; Gelbein, Abraham P.; and Santore, William J., to Lummus Company, The. Recovery of isophthalonitrile. 4,134,910, Cl. 260-465.00H.

Baril, Michel; and Legendre, Jacques, to Thomson-CSF. Junction between two microwave transmission lines of different field structures. 4,135,170, Cl. 333-26.000.

Barnett, Burton; and Brody, David. Dispenser for elongate thin flexible articles. 4,134,519, Cl. 221-46.000.

Barnett, George H., to ICI Australia Limited. Explosive composition flowable over wide temperature range. 4,134,780, Cl. 149-40.000.

Barta, James R.: *See—*
Johnsen, Frank R.; Barta, James R.; and Colner, Eugene J., 4,134,403, Cl. 128-233.000.

Barter, Owen H. Stove frame adapter. 4,134,385, Cl. 126-38.000.

Barthels, Manfred; Werkhoff, Peter; and Vitzthum, Otto, to HAG Aktiengesellschaft. Pressure relief valve for packing containers. 4,134,535, Cl. 229-62.500.

Basche, Joyce O., heir: *See—*
Basche, Malcolm, deceased, 4,135,030, Cl. 428-304.000.

Basche, Malcolm, deceased (by Basche, Joyce O., heir), to United Technologies Corporation. Tungsten impregnated casting mold. 4,135,030, Cl. 428-304.000.

BASF Aktiengesellschaft: *See—*
Distler, Harry; Hartert, Erwin; and Schlecht, Helmut, 4,134,889, Cl. 260-239.00B.
Hohenschutz, Heinz; Strohmeyer, Max; Herr, Manfred; and Kiefer, Hans, 4,134,915, Cl. 260-561.00R.

Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.

Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, 4,134,932, Cl. 260-631.000.

Kuesters, Werner; Osterloh, Rolf; and Jacobi, Manfred, 4,134,813, Cl. 204-159.240.

Batson, Paul E., to Crown American Irrigation, Inc. Irrigation line mover. 4,134,422, Cl. 137-344.000.

Battelle Memorial Institute: *See*—
Dawson, Gaynor W.; and Mercer, Basil W., 4,134,831, Cl. 210-33.000.

Bauerle, James E., to United States of America, Energy. Technique for detecting liquid metal leaks. 4,134,290, Cl. 73-40.50R.

Baur, Robert; and Iversen, Ralph, to Automation Industries, Inc. Explosion-proof automatic release helicopter tow connector. 4,134,634, Cl. 339-75.00M.

Bayer Aktiengesellschaft: *See*—
Brauner, Dieter; Kaluza, Hans J.; and Muschelknautz, Edgar, 4,134,954, Cl. 264-176.00F.
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,134,979, Cl. 424-215.000.
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,134,988, Cl. 424-273.00R.
Quiring, Bernd; Wagner, Kuno; and Konig, Joachim, 4,134,935, Cl. 260-859.00R.
Schmidt, Karl-Julius; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,134,978, Cl. 424-200.000.

Bayers, Jon H. Intraocular lens. 4,134,160, Cl. 3-13.000.

Bayers, Jon H. Adjustable intraocular lens. 4,134,161, Cl. 3-13.000.

Bayless, Jon W., Sr.; Pedersen, Robert D.; and Bellamy, John C., II, to Arthur A. Collins, Inc. High density digital transmission system. 4,135,057, Cl. 178-67.000.

Bazile, Yves: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; Bazile, Yves; Chignac, Michel; and Grain, Claude, 4,134,909, Cl. 260-456.00P.

Beall, James F.: *See*—
Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.

Beals, Charles D., to Exxon Research & Engineering Co. Process for achieving high conversions in the production of polyethylene. 4,135,044, Cl. 526-64.000.

Bean, David C.: *See*—
Kennepohl, Gerhard J. A.; Miller, Laverne J.; and Bean, David C., 4,135,022, Cl. 428-143.000.

Bearden, Roby, Jr.; and Aldridge, Clyde L., to Exxon Research & Engineering Co. Hydroconversion of heavy hydrocarbons. 4,134,825, Cl. 208-108.000.

Beatty, Robert E., to Flexitallic Gasket Company Inc. Fluid separation device. 4,134,541, Cl. 236-56.000.

Beaumont, Robert P.: *See*—
Futers, Lionel H.; and Beaumont, Robert P., 4,134,365, Cl. 119-51.500.

Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., to Air Products and Chemicals, Inc. Amine salts of tertiary amino acids. 4,134,994, Cl. 260-501.110.

Beck, Earl J., to United States of America, Navy. Seawater hydraulic motor distributing valve based on a hydrosphere bearing. 4,134,426, Cl. 137-625.230.

Becka, Michael M., to International Shoe Machine Corporation. Machine for performing an operation along a non-rectilinear workpiece periphery. 4,134,278, Cl. 69-6.500.

Becker, Hans-Joachim: *See*—
Hrovat, Milan; Becker, Hans-Joachim; and Huschka, Hans, 4,134,941, Cl. 264-0.500.

Becker, Richard J.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; and Westkamper, Michael J., 4,135,204, Cl. 358-101.000.

Beckers, Richard; Wedel, Wedigo V.; and Monheimius, Manfred, to Promat Gesellschaft fur moderne Werkstoffe mbH & Co. KG. Device for fireproofing electric conductors. 4,135,055, Cl. 174-48.000.

Beckett, Donald W.: *See*—
Pebler, Alfred R.; and Beckett, Donald W., 4,134,818, Cl. 204-195.00S.

Becton, Dickinson and Company: *See*—
Nugent, Edward L., 4,134,512, Cl. 215-247.000.

Beermann, Ewald H., to Martor-Argentax E. H. Beermann KG. Cutter for vehicle safety belts. 4,134,206, Cl. 30-294.000.

Begin, Louis E.: *See*—
Dunbar, Joseph E.; Begin, Louis E.; Broersma, Robert J.; and Dickerson, George D., 4,134,996, Cl. 424-330.000.

Belanger, William J., to Celanese Polymer Specialties Company. Cathodic electrocoating resin system comprising the reaction product of polyepoxide, a polyamine and a monocarboxylic acid. 4,134,864, Cl. 260-18.0EP.

Bell Telephone Laboratories, Incorporated: *See*—
Ritchie, Dennis M., 4,135,240, Cl. 364-200.000.

Bell, Wayne D.; and Hansen, Earl T., to Sperry Rand Corporation. Circuit for applying alpha/numeric data to a TV receiver. 4,135,182, Cl. 358-141.000.

Bellamy, John C., II: *See*—
Bayless, Jon W., Sr.; Pedersen, Robert D.; and Bellamy, John C., II, 4,135,057, Cl. 178-67.000.

Belliere, Pierre, to Ratier Figeac. Control devices having pivotal output elements driven by means of jacks. 4,134,329, Cl. 92-70.000.

Bely, Nikolai G.: *See*—
Gupalo, Jury D.; Nagaitsev, Vladimir A.; Troitsky, Vladimir A.; Bely, Nikolai G.; Parshin, Dmitry N.; and Zhinzhikov, Pavel A., 4,135,123, Cl. 323-56.000.

Bender, Hans; Unkelbach, Karl-Heinz; and Zabel, Wolf, to Klockner-Humboldt-Deutz Aktiengesellschaft. Method and apparatus for the separation of magnetizable particles from a finely-granular solid suspended in a carrier medium by means of intense field-magnet separation. 4,134,829, Cl. 209-223.00R.

Bender, Manfred, to Powlesland Engineering Limited. Canopy hoods. 4,134,331, Cl. 98-115.0LH.

Bendini, Alberto. Lathe for making contact lenses. 4,134,315, Cl. 82-14.00R.

Bendix Corporation, The: *See*—
Sawicki, Joseph J., 4,135,191, Cl. 343-121.000.

Beneteau, Donald J. Apparatus for resistance welding. 4,135,076, Cl. 219-89.000.

Benjamin, Herschel T. Bowling alley conditioning device. 4,134,361, Cl. 118-73.000.

Bennett, Peter: *See*—
Egan, Edward G.; Jackson, Ian S.; and Bennett, Peter, 4,134,685, Cl. 356-312.000.

Bentsen, Aksel T., to Gorivaerk AS. Impregnating liquid for wood and wood products. 4,134,771, Cl. 106-15.00R.

Berkenhoff, Hans-Peter, to Hoffmeister-Leuchten K. G. Spot-light reflector structure. 4,135,232, Cl. 362-306.000.

Bernardi, Luigi: *See*—
Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, 4,134,903, Cl. 260-365.000.

Bernewasser, Horst: *See*—
Scholl, Hans; and Bernewasser, Horst, 4,134,210, Cl. 33-23.00H.

Berol Kemi AB: *See*—
Lindewall, Frank W., 4,134,610, Cl. 293-71.00R.

Bertolacini, Ralph J.; and Kim, Dae K., to Standard Oil Company (Indiana). Catalyst and hydrocarbon conversion process. 4,134,823, Cl. 208-65.000.

Besson, Raymond J., to L'Etat Francais represente par le Delegue Ministeriel. Quartz resonator with electrodes that do not adhere to the crystal. 4,135,108, Cl. 310-344.000.

Betz Laboratories, Inc.: *See*—
Libutti, Bruce L.; and Oschell, Francis J., 4,134,728, Cl. 422-9.000.
Libutti, Bruce L.; and Oschell, Francis J., 4,134,729, Cl. 422-9.000.
Oschell, Francis J.; and Libutti, Bruce L., 4,134,727, Cl. 422-9.000.

Bevilacqua, Frank; and Groves, Malcolm D., to Combustion Engineering, Inc. Fuel lock down device. 4,134,790, Cl. 176-50.000.

Bey, Philippe; and Jung, Michel, to Merrell Toraude et Compagnie. Alpha-halomethyl derivatives of amines. 4,134,918, Cl. 260-583.0GG.

Bhat, Sujata V.: *See*—
Bajwa, Balbir S.; Bhat, Sujata V.; Dornauer, Horst; and de Souza, Noel J., 4,134,986, Cl. 424-283.000.

Bianchi, Valerio: *See*—
Latsch, Reinhard; Bianchi, Valerio; and Zeller, Hans, 4,134,374, Cl. 123-117.00D.

Bickley, Edgar B., Jr.; Harrison, Thomas H.; and Haigh, Ronald K. Method and apparatus for orally announcing vehicle speed. 4,135,188, Cl. 343-8.000.

Bierhoff, Martinus P. M.: *See*—
Kleuters, Wilhelm J.; van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,135,206, Cl. 358-128.000.

Bieringer, Hermann: *See*—
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,134,753, Cl. 71-108.000.

Bigney, Ernest N., to Jeffrey Manufacturing Division Dresser Industries Canada Ltd. Fastening device for troughing roll of a conveyor belt system. 4,134,488, Cl. 198-827.000.

Biller, Bruce A., to S&C Electric Company. Current limiting fuse construction. 4,135,174, Cl. 337-186.000.

Binaut, Jean D. E., to S.O.M.M.O.S. Compact fluid driven motor and reduction gear mechanism. 4,134,713, Cl. 418-91.000.

Binder, Dieter: *See*—
Hromatka, Otto; Binder, Dieter; Pfister, Rudolf; and Zeller, Paul, 4,134,898, Cl. 260-332.20C.

Biomagnetics International, Inc.: *See*—
Davis, Albert R., 4,134,395, Cl. 128-2.00R.

Birfield Trasmissioni S.p.A: *See*—
Stiasny, Carl-Heinz, 4,134,720, Cl. 432-209.000.

Birkeland, Stephen P.: *See*—
Huffman, William A.; Birkeland, Stephen P.; and O'Leary, Kevin P., 4,134,764, Cl. 96-1.600.

Birnkraut, Hans-Walter: *See*—
Feichtinger, Hans; Lutze, Siegfried; Birnkraut, Hans-Walter; and Kluy, Werner, 4,134,933, Cl. 260-848.000.

Bishop, James G.: *See*—
Abernethy, Robert R.; and Bishop, James G., 4,135,115, Cl. 315-97.000.

Bitko, Sheldon S., to Fifth Dimension, Inc. Tilt switch and holder. 4,135,067, Cl. 200-61.520.

Bjerklie, John W.: *See*—
La Haye, Paul G.; and Bjerklie, John W., 4,134,449, Cl. 165-83.000.

Bjorklund, Curt A. Non-drip valve. 4,134,428, Cl. 137-882.000.

Blameuser, Flora: *See*—
Krupp, Gerald L., 4,135,146, Cl. 340-384.00E.

Blochl, Hanns: *See*—
Schnall, Gunther; Schlick, Erich; and Blochl, Hanns, 4,134,667, Cl. 355-3.0DR.

Blomsma, Everhard C., to Shell Oil Company. Marine structure and method of drilling a hole by means of said structure. 4,134,461, Cl. 175-9.000.

Bloom, Allen; and Hung, Ling K., to RCA Corporation. Cholesteryl carbonates and carbamates of azo dyes. 4,134,888, Cl. 260-207.100.

Blumenfeld, Georg; and Vollkommer, Norbert, to Dynamit Nobel Aktiengesellschaft. Solution of an unsaturated polyester and a copolymerizable monomer. 4,134,934, Cl. 260-869.000.

Bluzer, Nathan, to Westinghouse Electric Corp. Median extractor. 4,135,248, Cl. 364-575.000.

Boehringer Ingelheim GmbH: *See*—
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.

Boehringer Mannheim GmbH: *See*—
Knitsch, Karl-Wolfgang; Hagen, Alexander; Munz, Eberhard; and Determann, Helmut, 4,134,943, Cl. 264-28.000.

Bogacki, Anthony P.; Farnsworth, Richard G.; Hardy, Samuel G.; Robinson, Paul B.; and Stutt, Charles A., to General Electric Company. Automatic remote meter reading and control system. 4,135,181, Cl. 340-310.00A.

Boger, Ernest F. Trailer hitch. 4,134,602, Cl. 280-478.00A.

Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., to Miles Laboratories, Inc. Specific binding assay with an enzyme modulator as a labeling substance. 4,134,792, Cl. 195-99.000.

Bohl, Thomas L.; and Pocock, Robert E., to Bailey Meter Company. Gas sampling system having a flow indicator. 4,134,289, Cl. 73-23.000.

Bolldorf, Kurt; Hager, Walter; and Tolle, Gunter, to Pfaff Industriemaschinen GmbH, Firma. Buttonhole sewing machine. 4,134,346, Cl. 112-70.000.

Bollinger, Joseph M.: *See*—
Machleder, Warren H.; and Bollinger, Joseph M., 4,134,846, Cl. 252-51.50A.

Bologna, John P.; and Lewchuk, Richard R., to PPG Industries, Inc. Mounting system for an add on glass panel. 4,134,240, Cl. 52-202.000.

Bolto, Brian A.: *See*—
Jackson, Mervyn B.; and Bolto, Brian A., 4,134,815, Cl. 204-159.220.

Bolton, Wilbur M.: *See*—
Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., 4,134,451, Cl. 165-133.000.

Boncela, Eleanor K. Dog exercising device. 4,134,364, Cl. 119-29.000.

Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, to Corning Glass Works. Thermal shock resistant honeycomb structures. 4,135,018, Cl. 428-116.000.

Boonstra, Lieuwe: *See*—
Van Alem, Antonius A. M.; Boonstra, Lieuwe; Dekker, Francois D.; and Van de Veerdonk, Johannes T. A., 4,135,083, Cl. 250-201.000.

Bopp & Reuther GmbH: *See*—
Kastner, Hans-Jurgen, 4,134,296, Cl. 73-194.0VS.

Borders, Raymond S., Jr.; and Shearon, Michael H., to Du Pont de Nemours, E. I., and Company. Electrical pulse train comparator. 4,135,082, Cl. 235-92.0CC.

Borg-Warner Corporation: *See*—
Bamsey, Robert G.; and van der Male, Dirk B., 4,134,377, Cl. 123-119.00A.

Borom, Marcus P., to General Electric Company. Method for rapid removal of cores made of Y_2O_3 from directionally solidified eutectic and superalloy materials. 4,134,777, Cl. 134-2.000.

Borota, Milan, Jr., to King Radio Corporation. Transponder decoder-/encoder circuitry. 4,135,187, Cl. 343-6.8LC.

Boschert Associates: *See*—
Forge, Charles O., 4,135,234, Cl. 363-21.000.

Bosen, Lynn R., to San/Bar Corporation. Modular, expandable intercom system for a multiple-station telephone subscriber installation. 4,135,063, Cl. 179-99.000.

Bosso, Joseph F.; and Sturni, Lance C., to PPG Industries, Inc. Process for cationic electrodeposition. 4,134,816, Cl. 204-181.00C.

Boudreau, Normand. Cartridge tape cleaning device. 4,134,170, Cl. 15-97.00R.

Bourdon, Bernard, to Alsthom-Atlantique. Method of attacking a thin film by decomposition of a gas in a plasma. 4,134,817, Cl. 204-192.00E.

Bowen Tools, Inc.: *See*—
Burns, Albert L., 4,135,068, Cl. 200-61.850.

Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, to Imperial Chemical Industries Limited. Coloration process. 4,134,723, Cl. 8-41.00C.

Boyden, John S., Jr.; Epstein, William W.; and Boyden, Paul W. Article of manufacture. 4,135,015, Cl. 428-36.000.

Boyden, Paul W.: *See*—
Boyden, John S., Jr.; Epstein, William W.; and Boyden, Paul W., 4,135,015, Cl. 428-36.000.

Boyer, Peter W.: *See*—
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., 4,134,306, Cl. 74-29.000.

Boyer, Robert C.; Martin, John A.; Raseley, LeRoy J.; and Stoker, Robert J., to Ecolaire Incorporated. Surface condenser with vertically separated tube bundles. 4,134,450, Cl. 165-111.000.

Braden, William B., Jr.: *See*—
Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,134,415, Cl. 137-13.000.

Bradley, Timothy G.; and McAdam, Raymond L., to Johns-Manville Corporation. Use of tannic or gallic acid to produce low beverage soluble iron content filter aid. 4,134,857, Cl. 252-450.000.

Brady, John M.: *See*—
Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,134,988, Cl. 424-273.00R.

Branen, Kenneth E.; and Gall, John J., to Avco Corporation. Laminated composite golf club shaft. 4,135,035, Cl. 428-377.000.

Brauner, Dieter; Kaluza, Hans J.; and Muschelknautz, Edgar, to Bayer Aktiengesellschaft. Spinning process and device with static mixing inserts. 4,134,954, Cl. 264-176.00F.

Brauser, Bradley O.; and Brauser, Stanley O. Wind driven electric power plant. 4,134,708, Cl. 415-30.000.

Brauser, Stanley O.: *See*—
Brauser, Bradley O.; and Brauser, Stanley O., 4,134,708, Cl. 415-30.000.

Brautigam, Robert F. Home heating and cooling system. 4,134,273, Cl. 62-141.000.

Bress, Dellason F.; and Conover, Joseph N., to Foster Wheeler Energy Corporation. Automated poking system for coal gasifier. 4,134,738, Cl. 48-85.200.

Briand, George J.: *See*—
Duprez, Wayne R.; and Briand, George J., 4,134,543, Cl. 236-48.00R.

Briffod, Jean-Paul, to Ateliers des Charmilles, S.A. Process and apparatus for electrical machining of an electrode workpiece by an electrode tool, using EDM and ECM. 4,134,807, Cl. 204-129.100.

Briggs, Robert E., to 'totes', Incorporated. Method of installing grip on handle. 4,134,198, Cl. 29-450.000.

Bright, Elvin M., Sr. Liquid flow control device. 4,134,550, Cl. 239-542.000.

Bringhurst, Edward D., to Tally Corporation. Half-herringbone support for restricting sideways vibration of comb hammers. 4,134,336, Cl. 101-93.040.

Brody, David: *See*—
Barnett, Burton; and Brody, David, 4,134,519, Cl. 221-46.000.

Broersma, Robert J.: *See*—
Dunbar, Joseph E.; Begin, Louis E.; Broersma, Robert J.; and Dickerson, George D., 4,134,996, Cl. 424-330.000.

Brooks, Michael J. Citizen band radio board game. 4,134,591, Cl. 273-252.000.

Brosens, Pierre J., to General Scanning, Inc. Limited rotation motor. 4,135,119, Cl. 318-128.000.

Brous, Donald, to Artificial and Transplant Organs, Inc. Hemodialysis apparatus. 4,134,834, Cl. 210-127.000.

Brown, Boveri & Cie Aktiengesellschaft: *See*—
Ebel, Herbert; Goehle, Rolf; and Schmitt, Volker, 4,135,134, Cl. 335-20.000.

Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., to Instrumentation Laboratory Inc. Automatic blood analysis apparatus and method. 4,134,678, Cl. 356-39.000.

Brownlee, Robert R.; and Tyers, Frank O., to Research Corporation. Cardiac pacer energy conservation system. 4,134,408, Cl. 128-419.0PS.

Bruce, Peter. Anchors. 4,134,356, Cl. 114-301.000.

Brugail Licensing Company: *See*—
Friedman, Herbert, 4,134,495, Cl. 206-387.000.

Bryan, Clifford C., to Samcoe Holding Corporation. Method for processing tubular knitted fabrics in continuous form. 4,134,188, Cl. 26-18.500.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,134,988, Cl. 424-273.00R.

Buchel, Urs; and Mollet, Hans, to Ciba-Geigy Corporation. Process for the production of granules. 4,134,725, Cl. 8-79.000.

Buchholz, Alexis E., to Gillette Company, The. Dry shaver foil heads. 4,134,202, Cl. 30-43.920.

Buchner, Klaus, to Siemens Aktiengesellschaft. Ultrasonic imaging apparatus operating according to the impulse-echo method. 4,135,139, Cl. 340-1.00R.

Buchner, Klaus, to Siemens Aktiengesellschaft. Ultrasonic imaging apparatus operating according to the impulse-echo method. 4,135,140, Cl. 340-1.00R.

Buck, Robert. Electronic monitoring system with selective signal inverter. 4,135,124, Cl. 323-19.000.

Buffington, Samuel E.; and Skidmore, Earl K. Can bead cutting device. 4,134,207, Cl. 30-433.000.

Bulbex Corporation: *See*—
Hinson, James E., 4,134,630, Cl. 316-2.000.

Bullinger, Walter. Apparatus for cutting tire carcasses into individual annular elements. 4,134,316, Cl. 82-56.000.

Bunnelle, Philip R., to FMC Corporation. Subterranean mining. 4,134,619, Cl. 299-17.000.

Burdett, Harry W., Jr., to Harry W. Burdett, Jr. Associates. Opening and emptying of bags filled with bulk materials. 4,134,508, Cl. 214-152.000.

Burlew, Leroy E.; Reid, Michael G.; and Hunt, William E., to Eastman

Kodak Company. Copier finisher for an electrographic reproducing device. 4,134,672, Cl. 355-14.000.

Burley, Joseph W.; Hutton, Ronald E.; and Oakes, Vincent, to Akzo N.V. Novel organotin stabilizer compositions and polyvinyl resins stabilized therewith. 4,134,878, Cl. 260-45.75S.

Burlington Industries, Inc.: *See*—
Swidler, Ronald; and Sanderson, William A., 4,134,722, Cl. 8-1.00A.

Burns, Albert L., to Bowen Tools, Inc. Dead man safety assembly. 4,135,068, Cl. 200-61.850.

Burton, Charles G., to Chisholm-Ryder Company, Inc. Harvester for grapes or the like with improved collector leaf construction. 4,134,251, Cl. 56-330.000.

Butcher, William J.: *See*—
Carstens, Ronald A.; and Butcher, William J., 4,134,781, Cl. 156-64.000.

Butler, John M.: *See*—
Cass, Robert A.; Butler, John M.; and Janzow, Edward F., 4,134,937, Cl. 260-862.000.

Butler-Newton, Inc.: *See*—
Lanza, Richard C.; and Sohval, A. Robert, 4,135,091, Cl. 250-336.000.

BWG Bergwerk- und Walzwerk-Maschinenbau GmbH: *See*—
Noe, Oskar F., 4,134,283, Cl. 72-8.000.

Byrne, Joseph B.; and Weber, Christian A., to Dow Chemical Company, The. Copolycarbonates of phenolphthalein polycarbonates and other polycarbonates. 4,134,936, Cl. 260-860.000.

C F S Corporation: *See*—
Straughan, Clemens F., 4,134,782, Cl. 156-79.000.

Cables de Communicaciones, S.A. of Poligono Industrial de Maplica C/D: *See*—
Cueto, Agustin, 4,134,715, Cl. 425-144.000.

Calderazzo, Franklin J. Back-pedal brake operator and braking system for multi-speed bicycles. 4,134,481, Cl. 192-5.000.

Caldwell, Stephen A.; and Massey, Randall R., to Whitehall Corporation. Marine seismic streamer with depth sensor calibrating means. 4,135,141, Cl. 340-7.0PC.

Calk, Walter R. Wheel mirror calibrating device. 4,134,682, Cl. 356-155.000.

Callahan, Brian W. Motor vehicle anti-theft device. 4,134,282, Cl. 70-212.000.

Callahan, Joseph W.; and Trumbull, John G., to Scott Paper Company. Method of treating a low integrity dry-formed nonwoven web and product made therefrom. 4,135,024, Cl. 428-171.000.

Cameron, Albert R., to Singer Company, The. Closing spring assembly for slam-shut valves. 4,134,421, Cl. 137-316.000.

Canadian General Electric Company, Ltd.: *See*—
Kuskowski, Walter T., 4,134,627, Cl. 312-214.000.

Candlin, John P.; and Segal, John A. A. A. G., to Imperial Chemical Industries Limited. Production of transition metal composition. 4,134,855, Cl. 252-429.00B.

Cann, Alfred J.: *See*—
Sanders, Royden C., Jr.; Richmond, Martin R.; and Cann, Alfred J., 4,135,156, Cl. 325-4.000.

Cannon, Joseph G.; Long, John P.; and Diana, John N., to University of Iowa Research Foundation. Effect of an aminotetralin derivative on coronary blood flow in infarcted hearts. 4,134,997, Cl. 424-330.000.

Canon Kabushiki Kaisha: *See*—
Hanakata, Takayoshi; Noda, Atsushi; and Seki, Mitsuaki, 4,134,696, Cl. 400-323.000.
Hirano, Reiji, 4,135,250, Cl. 364-900.000.
Kiyohara, Takehiko; Okuno, Youichi; Tunekawa, Tokuichi; and Hashimoto, Teiji, 4,134,652, Cl. 354-23.00R.
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,134,654, Cl. 354-60.00R.
Saito, Seiji; Sado, Ichiro; and Hirano, Reiji, 4,134,536, Cl. 235-310.000.
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, 4,134,660, Cl. 354-289.000.
Shimizu, Ichiro, 4,134,648, Cl. 352-27.000.
Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, 4,134,658, Cl. 354-266.000.

Cargill, Incorporated: *See*—
Cuddihy, Robert W.; and Knoebel, Daniel S., 4,134,881, Cl. 528-299.000.

Carl Still, Firma: *See*—
Lorenz, Kurt; Dungs, Horst; and Speich, Peter, 4,134,794, Cl. 201-27.000.

Carl Walther GmbH: *See*—
Hillenbrandt, Siegfried; and Keppeler, Dieter, 4,134,223, Cl. 42-84.000.

Carlo Erba S. p. A.: *See*—
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, 4,134,974, Cl. 424-248.540.

Carlson, Clifford H., to Recognition Equipment Incorporated. Character presence detector. 4,135,148, Cl. 340-146.30H.

Carrico, Robert J.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,134,792, Cl. 195-99.000.

Carrier Corporation: *See*—
Reimann, Robert C., 4,134,272, Cl. 62-115.000.

Carruthers, John A. Snag-resistant anchor. 4,134,355, Cl. 114-297.000.

Carstens, Ronald A.; and Butcher, William J., to Key Chemicals, Inc. Method for controlling warp in the manufacture of corrugated paperboard. 4,134,781, Cl. 156-64.000.

Carter, James R. Adjustable seat assembly. 4,134,565, Cl. 248-285.000.

Cartoceti, Alfredo: *See*—
Lazzari, Armando; Cartoceti, Alfredo; and Steinort, Eberhart, 4,134,557, Cl. 241-170.000.
Steinort, Eberhart; Lazzari, Armando; and Cartoceti, Alfredo, 4,134,553, Cl. 241-34.000.

Casio Computer Co., Ltd.: *See*—
Yasukura, Tohru, 4,134,254, Cl. 58-85.500.

Cass, Robert A.; Butler, John M.; and Janzow, Edward F., to Monsanto Research Corporation. Polyester resin composition. 4,134,937, Cl. 260-862.000.

Caterpillar Tractor Co.: *See*—
Atkinson, David W.; Kuntz, Donald A.; and Sprick, William L., 4,134,561, Cl. 248-632.000.
Balzer, David J., 4,134,478, Cl. 188-106.00P.
Krolak, Ronald L.; Duke, James T.; and Ritter, Arthur J., 4,134,622, Cl. 305-12.000.
Piercy, Richard J.; and Woessner, Neal L., 4,134,507, Cl. 214-145.00R.
Simmons, Gerald P., 4,134,506, Cl. 214-140.000.

Cech, Karl, to AKG Akustische u. Kino-Gerate Gesellschaft m.b.H. Packing receptacle. 4,134,493, Cl. 206-45.190.

Celanese Polymer Specialties Company: *See*—
Belanger, William J., 4,134,864, Cl. 260-18.0EP.

Celotex Corporation: *See*—
Wood, Edward H., 4,134,234, Cl. 49-429.000.

Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban: *See*—
Simeonov, Yordan T.; and Djabarov, Nikola B., 4,134,773, Cl. 106-89.000.

Chalmers, Alan G.; Whittaker, Frank L.; and Wharmby, David O., to Thorn Electrical Industries Limited. Electrical discharge lamp. 4,135,110, Cl. 313-225.000.

Chamberlain Manufacturing Corporation: *See*—
Queen, Daniel L., 4,134,471, Cl. 181-147.000.

Champion International Corporation: *See*—
Lillibridge, Harold R., 4,134,322, Cl. 93-61.00R.
Martinez, David J.; and Schillinger, Joseph F., 4,134,531, Cl. 229-23.0BT.
Scott, Raymond G.; and Wysocki, Lawrence S., 4,134,534, Cl. 229-52.00B.

Chang, Long F., to Owens-Illinois, Inc. Bottle having ribbed bottom. 4,134,510, Cl. 215-1.00C.

Chavanoz SA: *See*—
Seguin, Pierre, 4,135,056, Cl. 174-113.00C.

Chavarria, Antonio M. Spreader for the wires of a multi-strand wire fence. 4,134,575, Cl. 256-35.000.

Chemed Corporation: *See*—
Menke, Russell O.; Jacob, Jose T.; and Hwa, Chih M., 4,134,959, Cl. 422-16.000.

Cheng, Hsiung, to Merck & Co., Inc. Stabilized icings. 4,135,005, Cl. 426-659.000.

Chesebrough-Pond's Inc.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; and Westkamper, Michael J., 4,135,204, Cl. 358-101.000.

Chesley, Gilman D. Pneumatic tire inflation level indicator. 4,134,357, Cl. 116-34.00A.

Chiarello, George A.: *See*—
Ross, Lawrence J.; and Chiarello, George A., 4,134,917, Cl. 260-577.000.

Chignac, Michel: *See*—
Pigerol, Charles; de Cointet de Fillain, Paul; Bazile, Yves; Chignac, Michel; and Grain, Claude, 4,134,909, Cl. 260-456.00P.

Chisholm-Ryder Company, Inc.: *See*—
Burton, Charles G., 4,134,251, Cl. 56-330.000.

Chobanov, Tsvetko: *See*—
Jung, Margarete; Voss, Ernst; and Chobanov, Tsvetko, 4,135,041, Cl. 429-225.000.

Chomenko, Anthony: *See*—
Duzinskas, Donald R.; and Chomenko, Anthony, 4,134,580, Cl. 271-6.000.

Christensen, George L. Seat cover. 4,134,616, Cl. 297-188.000.

Christian, Alfred W., to Hydrotile Canada Limited. Plural molds with common actuating means. 4,134,568, Cl. 249-118.000.

Christian Rovsing A/S: *See*—
Seiersen, Ole S., 4,135,233, Cl. 363-21.000.

Christie, Christopher E.: *See*—
Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., 4,134,783, Cl. 156-396.000.

Christner, James E.: *See*—
Boguslaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,134,792, Cl. 195-99.000.

Christoph, Heinz: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.
Gussefeld, Horst; and Christoph, Heinz, 4,134,425, Cl. 137-625.300.

Chrysler Corporation: *See*—
Lansinger, Jere R., 4,134,484, Cl. 192-58.00B.

Ciba-Geigy AG: *See*—
Smith, Norman A., 4,134,765, Cl. 96-111.000.

Ciba-Geigy Corporation: *See—*
Buchel, Urs; and Mollet, Hans, 4,134,725, Cl. 8-79.000.
Hiestand, Armin; and Rohringer, Peter, 4,135,028, Cl. 428-253.000.
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,134,895, Cl. 260-326.410.
Schmidt, Andreas, 4,134,879, Cl. 260-45.85P.
Topfl, Rosemarie, 4,134,867, Cl. 260-21.000.

Cincinnati Milacron Inc.: *See—*
Grone, Robert J., 4,134,486, Cl. 198-466.000.

Claiborne, Jefferson L., to Dixie Yarns, Inc. Sewing thread containing a flame retardant lubricant. 4,135,034, Cl. 428-375.000.

Clark, Derek J., to Racal-Zonal Limited. Rotary punching apparatus. 4,134,319, Cl. 83-100.000.

Clark Equipment Company: *See—*
Ott, Edward R., 4,134,236, Cl. 52-118.000.

Clark, Kenneth W. Fishing lures. 4,134,224, Cl. 43-42.050.

Clay, Rufus G. Geothermal energy recovery. 4,134,462, Cl. 175-16.000.

Clearman, Jack F.: *See—*
Platt, Clark I.; and Clearman, Jack F., 4,134,277, Cl. 68-53.000.

Clement, Clyde H. Vehicle top loader mechanism. 4,134,509, Cl. 214-450.000.

Clements, Alwyn S.: *See—*
Metcalfe, Kenneth A.; and Clements, Alwyn S., 4,134,762, Cl. 96-1.50R.

Cline, Harvey E.: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,135,027, Cl. 428-195.000.

CMA, Inc.: *See—*
Kayfetz, Paul D.; McHugh, Joseph; and Dugan, James, 4,134,718, Cl. 431-125.000.

Coburn, Richard J., to Coburn Technology, Inc. Apparatus for image reproduction and image creation. 4,134,668, Cl. 355-3.00R.

Coburn Technology, Inc.: *See—*
Coburn, Richard J., 4,134,668, Cl. 355-3.00R.

Codding, Elias H.: *See—*
Jones, John D. P.; Smither, Miles A.; and Codding, Elias H., 4,134,498, Cl. 209-564.000.

Coe, Thomas F. Phase-locked loop oscillator. 4,135,165, Cl. 331-11.000.

Coker, William P.: *See—*
Hillis, James E.; and Coker, William P., 4,134,967, Cl. 423-462.000.

Collins, Robert J.; Stutsman, Richard R.; and Youngkin, Theodore C., to Rod Pierce & Associates. Article dispensing machine with spring-driven carriages for advancing articles to be dispensed. 4,134,520, Cl. 221-129.000.

Colner, Eugene J.: *See—*
Johnsen, Frank R.; Barta, James R.; and Colner, Eugene J., 4,134,403, Cl. 128-233.000.

Colpaert, Marc: *See—*
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,811, Cl. 204-159.150.
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,814, Cl. 204-159.150.

Columbia Steel Casting Co., Inc.: *See—*
McBain, Robert T.; and Johnson, Bruce C., 4,134,255, Cl. 59-78.000.

Combustion Engineering, Inc.: *See—*
Bevilacqua, Frank; and Groves, Malcolm D., 4,134,790, Cl. 176-50.000.

Commercial Vehicle Parts, Inc.: *See—*
Scott, Richard D., 4,134,439, Cl. 160-135.000.

Commissariat a l'Energie Atomique: *See—*
Aubert, Gilles, 4,134,789, Cl. 176-30.000.
Delafosse, Jacques, 4,134,791, Cl. 176-75.000.
Veragen, Rene, 4,134,487, Cl. 198-782.000.

Commonwealth of Australia, The: *See—*
Metcalfe, Kenneth A.; and Clements, Alwyn S., 4,134,762, Cl. 96-1.50R.

Commonwealth Scientific and Industrial Research Organization: *See—*
Jackson, Mervyn B.; and Bolto, Brian A., 4,134,815, Cl. 204-159.220.

Communications Patents Limited: *See—*
Cutler, Albert E., 4,135,202, Cl. 358-86.000.

Compagnie Generale de Telegraphie Sans Fil: *See—*
Josse, Paul, 4,135,189, Cl. 343-18.00E.

Compagnie Generale d'Electricite S.A.: *See—*
Godard, Bruno, 4,135,167, Cl. 331-94.5PE.

Compagnie Industrielle des Telecommunications Cit-Alcatel, S.A.: *See—*
Pincemin, Marcel, 4,135,061, Cl. 179-18.00E.

Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E. Heat exchanger elements and other chemical processing elements comprising metal coated, heat stabilized impervious graphite. 4,134,451, Cl. 165-133.000.

Conover, Joseph N.: *See—*
Bress, Dellason F.; and Conover, Joseph N., 4,134,738, Cl. 48-85.200.

Conrad, Jack S.; Granitz, Richard F.; and Lockard, Joseph L., to AMP Incorporated. Modular plug board system. 4,134,631, Cl. 339-17.00M.

Conrad, Robert J. Customizable golf parlor game. 4,134,590, Cl. 273-245.000.

Consolidated Fiberglass Products Co.: *See—*
Pfeffer, John R., 4,135,029, Cl. 428-284.000.

Construction Aids Technology, Inc.: *See—*
Eden, Donald A.; and Griffin, William H., 4,134,862, Cl. 260-17.4GC.

Container Corporation of America: *See—*
Heavner, William D., 4,134,533, Cl. 229-34.00R.
Knight, Onis A., Jr., 4,134,532, Cl. 229-32.000.
Smith, Richard A., 4,134,496, Cl. 206-453.000.

Conte, Alfeo A., Jr.: *See—*
Rebuck, Neal D.; and Conte, Alfeo A., Jr., 4,134,843, Cl. 252-28.000.

Continental Group, Inc., The: *See—*
Payne, Robert D.; and Kirsanoff, Boris J., 4,135,085, Cl. 250-325.000.

Continental Oil Company: *See—*
Gorin, Everett, 4,134,821, Cl. 208-8.000.
Gorin, Everett, 4,134,826, Cl. 208-108.000.
Jackson, Robert G., 4,134,732, Cl. 422-198.000.
Johnnie, James L.; and DeKluyver, Peter J., 4,134,735, Cl. 422-188.000.

Continental Scale Corporation: *See—*
Kushmuk, Walter P., 4,134,213, Cl. 33-169.00R.

Contoyanis, Peter J., to Liquid Controls Corporation. Non-rotating bushing. 4,134,175, Cl. 16-2.000.

Cook, Thomas H. Arrow release mechanism and arrow nock therefor. 4,134,369, Cl. 124-35.00A.

Copal Company Limited: *See—*
Ishiguro, Yasuo; and Kurosu, Tomio, 4,134,653, Cl. 354-42.000.

Cornellier, Joseph R. Weft storage means for fluid jet loom. 4,134,435, Cl. 139-452.000.

Corning Glass Works: *See—*
Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, 4,135,018, Cl. 428-116.000.
Pierson, Joseph E.; and Stookey, Stanley D., 4,134,747, Cl. 65-30.00R.
Su, Yao-Sin, 4,135,012, Cl. 427-309.000.

Courty, Philippe, to Institut Francais du Petrole. Catalysts, their manufacture for use in dehydrogenation reactions. 4,134,858, Cl. 252-455.00R.

CPC International Inc.: *See—*
Laitar, Robert, 4,134,442, Cl. 164-43.000.

Craven, William R.; and Lloyd, Leslie, to Endrust Holdings Limited. Folding roof. 4,134,611, Cl. 296-137.00C.

Crickmore, John D.; and Radford, Ernest R., to Walter Grafton & Son Limited. Resilient ribbon cartridges for business machines. 4,134,693, Cl. 400-208.000.

Crider, Ira J., Jr. Carry-about wardrobe unit. 4,134,479, Cl. 190-49.000.

Crosfield Electronics Limited: *See—*
Pugsley, Peter C.; and Wood, Peter J., 4,135,212, Cl. 358-256.000.

Crossley, Roger, to John Wyeth & Brother Limited. Thiazole compositions. 4,134,984, Cl. 424-270.000.

Crouch, Donald W., to General Electric Company. Vacuum circuit interrupter with disc-shaped beryllium contacts. 4,135,071, Cl. 200-275.000.

Crown American Irrigation, Inc.: *See—*
Batson, Paul E., 4,134,422, Cl. 137-344.000.

Crumbliss, Robert T.: *See—*
Jolley, Paul E.; and Crumbliss, Robert T., 4,134,347, Cl. 112-79.00R.

Crutchfield, Marvin M.; and Upton, Charles J., to Monsanto Company. 1,4-Dioxane polycarboxylates. 4,134,902, Cl. 260-340.600.

CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Di Vita, Pietro, 4,134,639, Cl. 350-96.150.

Csepel Muvek Jarmu Es Konfekciopari Gepgyara: *See—*
Dancso, Laszlo; Kocsis, Oliver; Horvath, Jeno; and Banszki, Miklos, 4,134,350, Cl. 112-110.000.

Csudor, Rosa, to Jahn-Csudor, Irene; and Fuzesi-Kurtos, Irene. Decorative textile, method for manufacture thereof and sewing machine attachment therefor. 4,134,352, Cl. 112-262.000.

Cuddihy, Robert W.; and Knoebel, Daniel S., to Cargill, Incorporated. High performance polyester resin. 4,134,881, Cl. 528-299.000.

Cueto, Agustin, to Cables de Communicaciones, S.A. of Poligono Industrial de Maplica C/D. Head for multiple insulation of conductors. 4,134,715, Cl. 425-144.000.

Culver, Richard B.: *See—*
Oliver, Donald W.; and Culver, Richard B., 4,135,087, Cl. 250-270.000.

Cummins Engine Company, Inc.: *See—*
Perr, Julius P., 4,134,549, Cl. 239-92.000.

Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., to Shur-Line Manufacturing Co., Inc. Applicator with reversible pad. 4,134,173, Cl. 15-210.00R.

Cutler, Albert E., to Communications Patents Limited. Broadcasting systems with fibre optic transmission lines. 4,135,202, Cl. 358-86.000.

Cutler-Hammer, Inc.: *See—*
Piber, Earl T., 4,135,069, Cl. 200-67.00G.

Cutting Room Appliances Corporation: *See—*
Grillo, Joseph A., 4,134,558, Cl. 242-75.430.

Cvacho, Daniel S.; Haufler, Edwin R.; Wallace, Joseph W.; and Woolard, James M., to Reynolds Metals Company. Method of making a container. 4,134,354, Cl. 113-120.00H.

Czuba, Leonard J.: *See—*
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,134,981, Cl. 424-251.000.

Czyryk, Chester S., to Mangood Corporation. Low profile platform scale. 4,134,467, Cl. 177-133.000.

Dach, Michael M.: *See—*
Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.

Dacom, Inc.: *See—*
Weber, Donald R., 4,135,214, Cl. 358-261.000.

Daikin Kogyo Kabushiki Kaisha: *See—*
Fumoto, Syozo; Shimizu, Tetsuo; and Ichiba, Shigeru, 4,134,995, Cl. 260-884.000.

Daman, Ernest L.: *See—*
Steiner, Peter; and Daman, Ernest L., 4,134,908, Cl. 260-449.60M.

Dammgen, Jurgen: *See—*
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.

Damon, John F., Sr., to Joan Fabrics Corporation. Pile fabric crushing apparatus. 4,134,187, Cl. 26-2.00R.

Danbara, Hiroshi: *See—*
Takiyama, Eiichiro; Komatsu, Yasuji; and Danbara, Hiroshi, 4,134,884, Cl. 260-861.000.

Dancso, Laszlo; Kocsis, Oliver; Horvath, Jeno; and Banszki, Miklos, to Csepel Muvek Jarmu Es Konfekciopari Gepgyara. Combined button stitching and sewing machine. 4,134,350, Cl. 112-110.000.

Daniel Valve Company: *See—*
Kim, Kee W., 4,134,288, Cl. 73-3.000.

Dankert, Lester J., to Dow Chemical Company, The. Wood crossties with cellular plastic inserts. 4,134,546, Cl. 238-370.000.

Darbyshire, Kenneth: *See—*
Small, Fred; and Darbyshire, Kenneth, 4,134,270, Cl. 405-302.000.

Dassler, Adolf. Sports shoes. 4,134,220, Cl. 36-30.00R.

Dataproducts Corporation: *See—*
Arzoumanian, Aram S., 4,134,337, Cl. 101-93.090.

Datis, Angelo P. Vapor collection and disposal system. 4,134,271, Cl. 62-54.000.

Daugirdas, Kristupas; and Elguindy, Samir, to Vapor Corporation. Modulated output force door operator. 4,134,231, Cl. 49-139.000.

Davidson, Franklin E.; and Pearson, Lee E., to Owens-Corning Fiberglas Corporation. Method of and apparatus for molding spigot rings on pipe sections and product of the method. 4,134,431, Cl. 138-109.000.

Davidson, James J. Starting assist device for swimmers. 4,134,583, Cl. 272-4.000.

Davis, Albert R., to Biomagnetics International, Inc. Method of using magnetic fields to conduct a screening diagnostic examination. 4,134,395, Cl. 128-2.00R.

Davis, Michael, to Airway Industries, Inc. Handle assembly for luggage case. 4,134,480, Cl. 190-58.00B.

Davis, Ralph A., to Turbopanel Motors, Inc. Linear turbine. 4,134,469, Cl. 180-65.0DD.

Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; and Westkamper, Michael J., to Chesebrough-Pond's Inc. Automatic glass blowing apparatus and method. 4,135,204, Cl. 358-101.000.

Davis, Raymond W.; and Downey, Paul J. J., to Plibrico Company Inc. Precast furnace pipe insulation. 4,134,721, Cl. 432-234.000.

Davis, Robert D., to Spectral Dynamics Corporation. Method and circuit for providing electrical runout reduction in rotating shaft vibration detection systems. 4,134,303, Cl. 73-660.000.

Davis, Robert D., to Spectral Dynamics Corporation. Method and apparatus for programming and reducing runout in rotating shaft vibration signal detection. 4,135,244, Cl. 364-508.000.

Davis, Steven S.: *See—*
Solum, Dallas; and Davis, Steven S., 4,134,835, Cl. 210-178.000.

Dawson, Gaynor W.; and Mercer, Basil W., to Battelle Memorial Institute. Method for lake restoration. 4,134,831, Cl. 210-33.000.

Decker, Harry J.: *See—*
Kurtz, Abraham N.; Thorsteinson, Erlind M.; and Decker, Harry J., 4,134,859, Cl. 252-456.000.

de Cointet de Fillain, Paul: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; Bazile, Yves; Chignac, Michel; and Grain, Claude, 4,134,909, Cl. 260-456.00P.

Deere & Company: *See—*
Lindstrom, Harold R., 4,134,690, Cl. 366-266.000.
Nelson, Robert W.; and Pierce, Steven M., 4,134,700, Cl. 403-334.000.

deGaston, Alexis N. Liquid ionizing radiation detector. 4,135,090, Cl. 250-336.000.

DeGironimo, Bruno: *See—*
Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., 4,134,678, Cl. 356-39.000.

Deguchi, Hidetaka: *See—*
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, 4,134,766, Cl. 96-55.000.

DeJovine, James M.: *See—*
DeVries, Donald L.; and DeJovine, James M., 4,134,844, Cl. 252-30.000.

Dekker, Francois D.: *See—*
Van Alem, Antonius A. M.; Boonstra, Lieuwe; Dekker, Francois D.; and Van de Veerdonk, Johannes T. A., 4,135,083, Cl. 250-201.000.

DeKluyver, Peter J.: *See—*
Johnnie, James L.; and DeKluyver, Peter J., 4,134,735, Cl. 422-188.000.

De Kok, Johannes A.: *See—*
Nijs, Marc; Vanassche, Frits; and De Kok, Johannes A., 4,134,197, Cl. 29-458.000.

Delafosse, Jacques, to Commissariat a l'Energie Atomique. Plate-type fuel assembly for a nuclear reactor. 4,134,791, Cl. 176-75.000.

Dembiak, Matthew R.; and Newton, Wayne McC., to Western Electric Company, Incorporated. Methods of making dual jacketed cable. 4,134,953, Cl. 264-174.000.

De Nora, Oronzio; and Traini, Carlo, to Diamond Shamrock Technologies, S.A. Metal anodes with reduced anodic surface and high current density and their use in electrowinning processes with low cathodic current density. 4,134,806, Cl. 204-105.00R.

den Toonder, Pieter, to Oak Industries Inc. Pole mounted converter. 4,135,157, Cl. 325-308.000.

De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, to UCB, Societe Anonyme. Halogenated photopolymerizable compositions. 4,134,811, Cl. 204-159.150.

De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, to UCB, Societe Anonyme. Halogenated photopolymerizable adhesives. 4,134,814, Cl. 204-159.150.

DeRyke, Thomas V.: *See—*
Patzke, Robert C.; and DeRyke, Thomas V., 4,134,522, Cl. 222-153.000.

DeSoto, Inc.: *See—*
Diaz, Francis A.; and Leo, Angelo F., 4,134,873, Cl. 260-37.00N.

de Souza, Noel J.: *See—*
Bajwa, Balbir S.; Bhat, Sujata V.; Dornauer, Horst; and de Souza, Noel J., 4,134,986, Cl. 424-283.000.

Determann, Helmut: *See—*
Knitsch, Karl-Wolfgang; Hagen, Alexander; Munz, Eberhard; and Determann, Helmut, 4,134,943, Cl. 264-28.000.

Dettling, Joseph C.: *See—*
Hindin, Saul G.; and Dettling, Joseph C., 4,134,860, Cl. 252-466.0PT.

Deussen, Werner, to Stella KG Werner Deussen. Container with frangible seal. 4,134,511, Cl. 215-32.000.

Deutsch Fastener Corp.: *See—*
Jackley, Robert D.; and Perez, Richard T., 4,134,704, Cl. 408-57.000.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,135,010, Cl. 427-215.000.
Volker, Herbert M.; Oser, Polat; Doring, Gerhard; and Koch, Harald, 4,134,733, Cl. 422-177.000.

DeVries, Donald L.; and DeJovine, James M., to Atlantic Richfield Company. Solid particles containing lubricating oil composition and method for using same. 4,134,844, Cl. 252-30.000.

Diamond Shamrock (Polymers) Limited: *See—*
Roubinek, Lubor, 4,134,861, Cl. 521-32.000.

Diamond Shamrock Technologies, S.A.: *See—*
De Nora, Oronzio; and Traini, Carlo, 4,134,806, Cl. 204-105.00R.

Diana, John N.: *See—*
Cannon, Joseph G.; Long, John P.; and Diana, John N., 4,134,997, Cl. 424-330.000.

Diaz, Francis A.; and Leo, Angelo F., to DeSoto, Inc. Polyurethane topcoat composition. 4,134,873, Cl. 260-37.00N.

Dick Blick Company: *See—*
Goodrich, William F.; Ingersoll, Robert C.; and Doman, Donald W., 4,134,445, Cl. 164-287.000.

Dickerson, George D.: *See—*
Dunbar, Joseph E.; Begin, Louis E.; Broersma, Robert J.; and Dickerson, George D., 4,134,996, Cl. 424-330.000.

Dickie, Douglas P.; and Nelson, Larry A., to Tektronix, Inc. Dynamic damping for SECAM high-frequency de-emphasis. 4,135,201, Cl. 358-40.000.

Diederich, David A., to Northland Group, Inc., The. Ice hockey stick. 4,134,587, Cl. 273-67.00A.

Diesel Kiki Company, Ltd.: *See—*
Sugiura, Hiroyuki, 4,134,542, Cl. 236-13.000.

Dietrich, Oelhschlagel: *See—*
Yamaji, Kenkichi; Dietrich, Oelhschlagel; Abe, Hajime; and Tamura, Koichi, 4,134,196, Cl. 29-420.000.

Di Luzio, Carl L. Spring actuated billiard cue. 4,134,588, Cl. 273-69.000.

DiMatteo, Frank J. Strap for a protective device. 4,134,400, Cl. 128-158.000.

DiMatteo, Paul; Ross, Joseph A.; and Whiteman, John P., to Solid Photography Inc. Navigational plotter. 4,135,190, Cl. 434-105.00R.

DiMille, Dante; Dredger, Edward; and Passantino, Thomas. Runnerless roller sled. 4,134,599, Cl. 280-87.010.

Dipl.-ing. Hanns Frohler KG: *See—*
Frohler, Hanns; and Rossberger, Erwin, 4,134,805, Cl. 204-82.000.

Distler, Harry; Hartert, Erwin; and Schlecht, Helmut, to BASF Aktiengesellschaft. Manufacture of glycinonitriles. 4,134,889, Cl. 260-239.00B.

Ditlev-Simonsen, O., Jr.: *See—*
Gamst, Einar, 4,134,547, Cl. 239-404.000.

Di Vita, Pietro, to CSELT - Centro Studi e Laboratori Telecomunicazioni S.p.A. Optical path-length equalizer with graded refractive index. 4,134,639, Cl. 350-96.150.

Dixie Yarns, Inc.: *See—*
Claiborne, Jefferson L., 4,135,034, Cl. 428-375.000.

Djabarov, Nikola B.: *See—*
Simeonov, Yordan T.; and Djabarov, Nikola B., 4,134,773, Cl. 106-89.000.

Dlugopolski, Joseph, to Fidelity Container Corp. Shock absorbing carton insert. 4,134,497, Cl. 206-521.000.

Doane, William M.: *See*—
Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,134,863, Cl. 260-17.4GC.

Dobbs, John McG.: *See*—
Gordon, Bernard M.; Neumann, Leopold; and Dobbs, John McG., 4,135,247, Cl. 364-414.000.

Dockerty, Robert C., executor: *See*—
Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, 4,135,018, Cl. 428-116.000.

Dockerty, Stuart M., deceased: *See*—
Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, 4,135,018, Cl. 428-116.000.

Dodge, Leonard P.; and Morley, Wendy E., to Petdoors Limited. Animal door assembly. 4,134,232, Cl. 49-386.000.

Dohi, Fumio: *See*—
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, 4,134,956, Cl. 264-256.000.

Doll, Henri G., to Doll Research, Inc. Method and apparatus for developing intermittent venous blood flow and measuring total blood flow. 4,134,396, Cl. 128-2.05F.

Doll Research, Inc.: *See*—
Doll, Henri G., 4,134,396, Cl. 128-2.05F.

Doman, Donald W.: *See*—
Goodrich, William F.; Ingersoll, Robert C.; and Doman, Donald W., 4,134,445, Cl. 164-287.000.

Dombroski, John R.: *See*—
Stoakley, Diane M.; and Dombroski, John R., 4,134,929, Cl. 260-881.000.

Domglas Inc.: *See*—
Levene, Leon; and McClung, R. Wayne, 4,134,746, Cl. 65-30.00E.

Doring, Gerhard: *See*—
Volker, Herbert M.; Oser, Polat; Doring, Gerhard; and Koch, Harald, 4,134,733, Cl. 422-177.000.

Dornauer, Horst: *See*—
Bajwa, Balbir S.; Bhat, Sujata V.; Dornauer, Horst; and de Souza, Noel J., 4,134,986, Cl. 424-283.000.

Dostman, Lev S.: *See*—
Genrikh, Georgy A.; Nikonets, Leonid A.; Dostman, Lev S.; and Korenev, Vsevolod T., 4,135,221, Cl. 361-1.000.

Dow Chemical Company, The: *See*—
Abdallah, Abdulmuniem H.; and Shea, Philip J., 4,134,992, Cl. 424-326.000.
Byrne, Joseph B.; and Weber, Christian A., 4,134,936, Cl. 260-860.000.
Dankert, Lester J., 4,134,546, Cl. 238-370.000.
Dunbar, Joseph E.; Begin, Louis E.; Broersma, Robert J.; and Dickerson, George D., 4,134,996, Cl. 424-330.000.
Hillis, James E.; and Coker, William P., 4,134,967, Cl. 423-462.000.
Lee, Do I., 4,134,872, Cl. 260-29.7UP.

Dow, James; Lloyd, Ronald; and Patchell, Albert G., to Smith & Nephew Polyfabrik Limited. Production of filaments. 4,134,951, Cl. 264-147.000.

Downey, Paul J. J.: *See*—
Davis, Raymond W.; and Downey, Paul J. J., 4,134,721, Cl. 432-234.000.

Dozier, Harold W.: *See*—
Green, Robert S.; Dozier, Harold W.; and McKenny, Vernon G., 4,135,102, Cl. 307-205.000.

Drauglis, Clyde O., to Edmund Scientific Company. Low obscuration spider for supporting optical element. 4,134,638, Cl. 350-49.000.

Dredger, Edward: *See*—
DiMille, Dante; Dredger, Edward; and Passantino, Thomas, 4,134,599, Cl. 280-87.010.

Dresser Industries, Inc.: *See*—
Martin, Paul W., 4,134,286, Cl. 72-122.000.
Oliver, Donald W.; and Culver, Richard B., 4,135,087, Cl. 250-270.000.
Read, Norman W., 4,134,455, Cl. 166-334.000.

Driskill, Roger D., to General Electric Company. Multi-stage continuous plastic extrusion apparatus, and extrusion screw. 4,134,714, Cl. 425-113.000.

Drugge, Roland: *See*—
Ilmoni, Pehr-Adrian; and Drugge, Roland, 4,134,944, Cl. 264-37.000.

DuBois, Richard, to Wagner Electric Corporation. Vacuum fluorescent device with continuous strokes. 4,135,117, Cl. 340-758.000.

Dufour, Paul: *See*—
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,811, Cl. 204-159.150.
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,814, Cl. 204-159.150.

Dugan, James: *See*—
Kayfetz, Paul D.; McHugh, Joseph; and Dugan, James, 4,134,718, Cl. 431-125.000.

Duke, James T.: *See*—
Krolak, Ronald L.; Duke, James T.; and Ritter, Arthur J., 4,134,622, Cl. 305-12.000.

Dunbar, Joseph E.; Begin, Louis E.; Broersma, Robert J.; and Dickerson, George D., to Dow Chemical Company, The. Method for inhibiting ADP-induced platelet aggregation using phenylthioalkylamines. 4,134,996, Cl. 424-330.000.

Dungs, Horst: *See*—
Lorenz, Kurt; Dungs, Horst; and Speich, Peter, 4,134,794, Cl. 201-27.000.

Dunichev, Jury F.; Dushenkov, Anatoly S.; and Pugachev, Arkady K. Method of manufacturing corrugated tubing of polytetrafluorethylene. 4,134,958, Cl. 264-320.000.

Dunlop Limited: *See*—
Fisher, Ronald; and Smith, Norman, 4,134,360, Cl. 118-49.100.

Du Pont de Nemours, E. I., and Company: *See*—
Borders, Raymond S., Jr.; and Shearon, Michael H., 4,135,082, Cl. 239-92.0CC.
Frankfort, Hans, R. E.; and Knox, Benjamin H., 4,134,882, Cl. 528-309.000.
Hammond, Leon F., Jr., 4,134,736, Cl. 159-3.000.
Hull, Charles W., 4,135,094, Cl. 250-427.000.
Reimer, Ronald A., 4,134,923, Cl. 260-606.50B.

Duprez, Wayne R.; and Briand, George J., to Standard-Thomson Corporation. Snap action thermally responsive fluid control valve. 4,134,543, Cl. 236-48.00R.

Dura Corporation: *See*—
Jones, Raymond E., 4,134,475, Cl. 187-8.750.

Dushenkov, Anatoly S.: *See*—
Dunichev, Jury F.; Dushenkov, Anatoly S.; and Pugachev, Arkady K., 4,134,958, Cl. 264-320.000.

Duykers, Ludwig R.: *See*—
Percy, Joseph L.; and Duykers, Ludwig R., 4,135,142, Cl. 340-8.00R.

Duzinskas, Donald R.; and Chomenko, Anthony, to W. F. Hall Printing Company. Method and apparatus for hopper loader. 4,134,580, Cl. 271-6.000.

Dyllus, Frank-Ulrich; Kaulen, Hans; and Schmidt, Manfred, to VAW-Leichtmetall GmbH. Equipment for processing material in sheet or ribbon form. 4,134,559, Cl. 242-78.100.

Dynamic Air Inc.: *See*—
Steele, James R., 4,134,466, Cl. 177-114.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Blumenfeld, Georg; and Vollkommer, Norbert, 4,134,934, Cl. 260-869.000.
Petersen, Egon N.; and Schrage, Klaus, 4,134,925, Cl. 568-637.000.

Dynascan Corporation: *See*—
Stone, Dennis C., 4,135,153, Cl. 324-158.00T.

E. R. Squibb & Sons, Inc.: *See*—
Yale, Harry L.; and Petigara, Ramesh B., 4,134,975, Cl. 424-263.000.

Eastern Company, The: *See*—
Pelcin, Albert L., 4,134,281, Cl. 70-208.000.

Eastman Kodak Company: *See*—
Burlew, Leroy E.; Reid, Michael G.; and Hunt, William E., 4,134,672, Cl. 355-14.000.
Fearnside, William T., 4,135,215, Cl. 360-70.000.
Pacifici, James G.; and Newland, Gordon C., 4,134,809, Cl. 204-159.120.
Stoakley, Diane M.; and Dombroski, John R., 4,134,929, Cl. 260-881.000.

Eaton Corporation: *See*—
Smedley, Daniel G.; Hopkins, Gary L.; and Urban, John A., 4,134,621, Cl. 303-96.000.

Ebel, Herbert; Goehle, Rolf; and Schmitt, Volker, to Brown, Boveri & Cie Aktiengesellschaft. Electric wiring switch, especially a line protection switch with a fault-current circuit breaker. 4,135,134, Cl. 335-20.000.

Eberle, Terrence F., to Solid State Devices, Inc. Error detecting circuit for a traffic control system. 4,135,145, Cl. 340-46.000.

Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, to Boehringer Ingelheim GmbH. Phenylalkylamino-alkyl derivatives of quinazolinone and phthalazinone. 4,134,980, Cl. 424-250.000.

Eckardt, Helmut, to Schloemann-Siemag AG. Control of plastic injection. 4,134,687, Cl. 366-76.000.

Eckert, Robert C., to International Paper Company. Delignification of lignocellulosic material with an alkaline liquor containing a cyclic amino compound. 4,134,787, Cl. 162-72.000.

Eckles, William E.; and Starinshak, Thomas W., to R. O. Hull & Company, Inc. Nitrogen and sulfur compositions and acid copper plating baths. 4,134,803, Cl. 204-52.00R.

Ecolaire Incorporated: *See*—
Boyer, Robert C.; Martin, John A.; Raseley, LeRoy J.; and Stoker, Robert J., 4,134,450, Cl. 165-111.000.

Edelbrock-Hadley Corporation: *See*—
Hadley, Dawson N., 4,134,368, Cl. 123-32.0EA.

Eden, Donald A.; and Griffin, William H., to Construction Aids Technology, Inc. Method for stabilizing soil and for providing a backfill for grounding members. 4,134,862, Cl. 260-17.4GC.

Edinger, Gerald: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.

Edmonds, Christopher J.; and Gudnason, Geir V., to Tenco Brooke Bond, Ltd. Process for enhancing the color and flavor of tea. 4,135,001, Cl. 426-250.000.

Edmund Scientific Company: *See*—
Drauglis, Clyde O., 4,134,638, Cl. 350-49.000.

Edwards, Frederick A.: *See*—
Johnston, John K.; and Edwards, Frederick A., 4,135,129, Cl. 324-51.000.

Egan, Edward G.; Jackson, Ian S.; and Bennett, Peter, to Varian Techtron Proprietary Limited. Flameless atomization. 4,134,685, Cl. 356-312.000.
Ehlers, Klaus P.; and Heymer, Gero, to Hoechst Aktiengesellschaft. Process and apparatus for purifying wet-processed phosphoric acid. 4,134,964, Cl. 423-321.00R.
Ehlers, Klaus-Peter; and Heymer, Gero, to Hoechst Aktiengesellschaft. Production of pure alkali metal phosphate solutions from wet-processed phosphoric acids. 4,134,962, Cl. 423-313.000.
Ehret, Gordon F.: *See*—
Rowley, William N.; Ehret, Gordon F.; and Williams, Robert R., 4,134,836, Cl. 210-232.000.
Ehrlich, John T.: *See*—
Ehrlich, Stanley V.; and Ehrlich, John T., 4,134,556, Cl. 241-79.300.
Ehrlich, Melvin: *See*—
Ehrlich, Robert; and Ehrlich, Melvin, 4,134,853, Cl. 252-300.000.
Ehrlich, Robert; and Ehrlich, Melvin. Photochromic composition. 4,134,853, Cl. 252-300.000.
Ehrlich, Stanley V.; and Ehrlich, John T., to Georgia-Pacific Corporation. Tire shredder. 4,134,556, Cl. 241-79.300.
Elam, James O. External pressure-volume monitor for endotracheal cuff. 4,134,407, Cl. 128-351.000.
Electricite de France: *See*—
Le Huede, Georges; and Zacharie, Guy, 4,134,287, Cl. 72-370.000.
Electricity Council, The: *See*—
Ellis, David; and Sunderland, John G., 4,134,820, Cl. 204-300.00R.
Elevations/Design, Inc.: *See*—
Maxwell, Paul E., 4,135,020, Cl. 428-131.000.
Elguindy, Samir: *See*—
Daugirdas, Kristupas; and Elguindy, Samir, 4,134,231, Cl. 49-139.000.
Eli Lilly and Company: *See*—
Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,134,993, Cl. 424-331.000.
Paget, Charles J.; and Wikel, James H., 4,134,914, Cl. 260-552.0SC.
Elie, Andre: *See*—
Lagarde, Pierre; and Elie, Andre, 4,134,538, Cl. 235-449.000.
Elliott, John L. Animal sorter. 4,134,366, Cl. 119-155.000.
Ellis, David; and Sunderland, John G., to Electricity Council, The. Separation of particulate material from sludge, slurries and like flowable material. 4,134,820, Cl. 204-300.00R.
Elmasian, Edward, to Kirk, David L., a part interest. Traffic light radio control system. 4,135,144, Cl. 340-32.000.
Elmer, Frank J., to United States of America, Army. Method of determining relative orientation of physical systems. 4,134,681, Cl. 356-152.000.
Elmore, Jack G.: *See*—
Elmore, John E., 4,134,268, Cl. 405-43.000.
Elmore, John E., to Elmore, Jack G.; and Thomas, H. P., Jr. Drainage field pipe. 4,134,268, Cl. 405-43.000.
Elsbernd, Carl A.; and Spurgin, Wendell P., to United Air Specialists, Inc. Foam cleaning system for an electrostatic precipitator. 4,134,741, Cl. 55-13.000.
Emoto, Kazuhiro; Yabuta, Kenji; Yamashita, Kiyoshi; and Futaki, Kiyoshi, to Mitsubishi Paper Mills, Ltd. Gelatin-containing photographic layer incorporated with hardener. 4,134,770, Cl. 96-100.00R.
Emrich, Helmut; and Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Device for the registering of sheets in printing presses in which the sheets are fed in an underlapped stream. 4,134,582, Cl. 271-237.000.
Endo, Katutoshi: *See*—
Fujimura, Itaru; and Endo, Katutoshi, 4,134,763, Cl. 96-1.50R.
Endo, Sigeru: *See*—
Yoshikawa, Shinsuke; Sawa, Yuji; and Endo, Sigeru, 4,134,952, Cl. 264-173.000.
Endo, Takaya: *See*—
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, 4,134,766, Cl. 96-55.000.
Endrust Holdings Limited: *See*—
Craven, William R.; and Lloyd, Leslie, 4,134,611, Cl. 296-137.00C.
Energy Block Ltd.: *See*—
Walton, Robert J., 4,134,241, Cl. 52-275.000.
Engelhard Minerals & Chemicals Corporation: *See*—
Hindin, Saul G.; and Dettling, Joseph C., 4,134,860, Cl. 252-466.0PT.
Engineers Sales-Service Co., Inc.: *See*—
Ivins, Earl E.; and Ivins, John L., 4,134,711, Cl. 417-370.000.
England, Charles J., to Monotype Corporation Limited, The. Method of making an assembly. 4,134,651, Cl. 354-17.000.
Enso-Gutzeit Osakeyhtio: *See*—
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, 4,134,562, Cl. 639-.
Enthone, Incorporated: *See*—
Zehnder, Joseph A.; and Stevens, Terry K., 4,134,804, Cl. 204-55.00R.
Entner, Josef: *See*—
Udert, Karl-Ernst; and Entner, Josef, 4,134,597, Cl. 279-103.000.
Envirogenic Systems Company: *See*—
Schell, William J., 4,134,742, Cl. 55-16.000.
Envirotech Corporation: *See*—
Solum, Dallas; and Davis, Steven S., 4,134,835, Cl. 210-178.000.
Epstein, William W.: *See*—
Boyden, John S., Jr.; Epstein, William W.; and Boyden, Paul W., 4,135,015, Cl. 428-36.000.
Erickson, Donald E.; and Volk, Rodney H., to Thermo King Corporation. Vehicle roof-mounted air conditioning unit. 4,134,275, Cl. 62-244.000.
Erwin, Curtis L., Jr. Compensating fuel measuring system for engines. 4,134,301, Cl. 73-453.000.
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Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., 4,134,482, Cl. 192-91.00R.
Eskesen, John H., to General Electric Company. Thermosyphon liquid cooled turbine bucket. 4,134,709, Cl. 416-1.000.
Esquire, Inc.: *See*—
Holmes, Kenneth P., 4,135,223, Cl. 361-56.000.
Etude et Realization de Chaines Automatiques ERCA: *See*—
Philippon, Raymond C.; and Hautemont, Jean-Claude H., 4,134,717, Cl. 425-383.000.
Evans, Delme; Saunders, John C.; and Williamson, William R. N., to Eli Lilly and Company. Benzophenone derivatives. 4,134,993, Cl. 424-331.000.
Ewers, Marion H. Wind turbine apparatus. 4,134,707, Cl. 415-4.000.
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Baker, Richard H., 4,135,235, Cl. 363-43.000.
Beals, Charles D., 4,135,044, Cl. 526-64.000.
Bearden, Roby, Jr.; and Aldridge, Clyde L., 4,134,825, Cl. 208-108.000.
Langer, Arthur W., Jr., 4,134,938, Cl. 260-877.000.
Makowski, Henry S.; and O'Farrell, Charles P., 4,134,870, Cl. 260-28.50B.
Oswald, Alexis A.; and Murrell, Lawrence L., 4,134,906, Cl. 260-429.0CY.
F. J. Littell Machine Company: *See*—
Johnson, Kenneth C., 4,134,334, Cl. 100-48.000.
F. M. Valve Manufacturing Co., Ltd.: *See*—
Matsunaga, Masakazu, 4,134,163, Cl. 4-302.000.
Falconer Plate Glass Corporation: *See*—
Workens, Frank M., 4,135,008, Cl. 427-168.000.
Fanta, George F.; Stout, Edward I.; and Doane, William M., to United States of America, Agriculture. Highly absorbent graft copolymers of polyhydroxy polymers, acrylonitrile, and acrylic comonomers. 4,134,863, Cl. 260-17.4GC.
Fante, Ronald L.: *See*—
Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., 4,135,185, Cl. 340-552.000.
Fariss, James D., Jr., to Innovation Enterprises, Inc. Device and method for measuring coin die rotation error. 4,134,209, Cl. 33-1.00N.
Farnsworth, Richard G.: *See*—
Bogacki, Anthony P.; Farnsworth, Richard G.; Hardy, Samuel G.; Robinson, Paul B.; and Stutt, Charles A., 4,135,181, Cl. 340-310.00A.
Faulkner, Marty. Belt member and method of constructing same. 4,134,154, Cl. 2-338.000.
Fearnside, William T., to Eastman Kodak Company. Video recording format for increasing track-to-track correlation. 4,135,215, Cl. 360-70.000.
Feichtinger, Hans; Lutze, Siegfried; Birnkraut, Hans-Walter; and Kluy, Werner, to Ruhrchemie Aktiengesellschaft. 4,4-Thio-bis-(dialkylphenol)/formaldehyde condensates. 4,134,933, Cl. 260-848.000.
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O'Rourke, James; and Feldberg, Murray, 4,134,335, Cl. 100-98.00R.
Fellowes-Freeman, Paul A.: *See*—
Fraser, Stewart P. T.; and Fellowes-Freeman, Paul A., 4,134,552, Cl. 241-33.000.
Ferrieu, Gilbert M. M., to U.S. Philips Corporation. Electric network for use in a subscriber's loop. 4,135,062, Cl. 179-84.00R.
Ferry, William R.; and Voss, James R., to United States of America, Army. Electronic fuel injection control. 4,134,367, Cl. 123-32.0EA.
FIAMM S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio: *See*—
Frigo, Domenico, 4,134,200, Cl. 29-594.000.
Fidelity Container Corp.: *See*—
Dlugopolski, Joseph, 4,134,497, Cl. 206-521.000.
Fiedor, Richard J.; and Hanes, Maurice H., to Westinghouse Electric Corp. High energy, short duration pulse system. 4,135,099, Cl. 250-551.000.
Fielding, Gordon W., Sr. Mobile easel and seating means. 4,134,614, Cl. 297-156.000.
Fifth Dimension, Inc.: *See*—
Bitko, Sheldon S., 4,135,067, Cl. 200-61.520.
Finkel, Gilbert. Method of making a toaster potato product. 4,135,004, Cl. 426-550.000.
Finn, Donald J. Billfold bill file. 4,134,437, Cl. 150-38.000.
Firm. Ing. Gunter Klemm: *See*—
Klemm, Gunter, 4,134,460, Cl. 173-163.000.
Fischer, Hermann: *See*—
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.
Fischer, Joseph: *See*—
Hoyt, John M.; and Fischer, Joseph, 4,135,026, Cl. 428-220.000.
Fischer, Karl. Electric cooking plate with a temperature limiter. 4,135,081, Cl. 219-449.000.
Fischer & Porter Company: *See*—
Herzl, Peter J., 4,134,297, Cl. 73-194.0S..
Fischer, Walter. Gripping collar. 4,134,183, Cl. 24-132.0AA.
Fisher, Donald J., to Xerox Corporation. Dual brush cleaning apparatus. 4,134,673, Cl. 355-15.000.

Fisher, Kenneth J., to American Sterilizer Company. Surgical light assembly. 4,135,231, Cl. 362-269.000.

Fisher, Mahlon B.; Gallaro, Anthony V.; and Williams, George N., to GTE Sylvania Incorporated. Color cathode ray tube screen structure providing improved contrast. 4,135,112, Cl. 313-470.000.

Fisher, Michael H.; and Tolman, Richard L., to Merck & Co., Inc. Carbohydrate derivatives of milbemycin and processes therefor. 4,134,973, Cl. 424-180.000.

Fisher, Ronald; and Smith, Norman, to Dunlop Limited. Apparatus for vapor deposition on tubular substrate. 4,134,360, Cl. 118-49.100.

Fishwick, Brian R.: *See*—
Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,134,723, Cl. 8-41.00C.

Flexitallic Gasket Company Inc.: *See*—
Beatty, Robert E., 4,134,541, Cl. 236-56.000.

Flood, John D., to Iden, Charles R., a part interest. Drawing indicator for bows. 4,134,383, Cl. 124-24.00R.

Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., to Texaco Inc. Pipeline transportation of heavy crude oil. 4,134,415, Cl. 137-13.000.

Flow Technology, Inc.: *See*—
Guthrie, James F., 4,134,298, Cl. 73-231.00R.

Flynn, Patrick F.: *See*—
Wise, Lawrence D.; Flynn, Patrick F.; and Morrison, Glenn C., 4,134,982, Cl. 424-263.000.

Flynn, Thomas P.; and Wurster, James C., to Super Products Corporation. Sewer and catch basin cleaner. 4,134,174, Cl. 15-302.000.

FMC Corporation: *See*—
Buanelle, Philip R., 4,134,619, Cl. 299-17.000.
Pals, Raimond, 4,134,963, Cl. 423-315.000.
Pinsky, Michael L., 4,134,798, Cl. 204-1.00T.
Stella, Ejidio, 4,134,245, Cl. 53-547.000.

Fohl, Timothy, to GTE Sylvania Incorporated. Leadless electric flash lamp assembly. 4,135,227, Cl. 362-6.000.

Forge, Charles O., to Boschert Associates. Saturable reactor switch control for switching regulator power supplies. 4,135,234, Cl. 363-21.000.

Forneris, John L.; Hicks, William W.; Keller, John H.; McKenna, Charles M.; and Seirmarco, James A., to International Business Machines Corporation. Ion implantation apparatus for controlling the surface potential of a target surface. 4,135,097, Cl. 250-492.00B.

Forster, Helmut: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.

Foster, Robert G.: *See*—
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; and Westkamper, Michael J., 4,135,204, Cl. 358-101.000.

Foster Wheeler Energy Corporation: *See*—
Bress, Dellason F.; and Conover, Joseph N., 4,134,738, Cl. 48-85.200.
Steiner, Peter; and Daman, Ernest L., 4,134,908, Cl. 260-449.60M.

Franchi, Peter R.: *See*—
Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., 4,135,185, Cl. 340-552.000.

Frankfort, Hans, R. E.; and Knox, Benjamin H., to Du Pont de Nemours, E. I., and Company. Poly(ethylene terephthalate)filaments. 4,134,882, Cl. 528-309.000.

Fraser, Stewart P. T.; and Fellowes-Freeman, Paul A., to Simon-Barron Limited. Grinding machines. 4,134,552, Cl. 241-33.000.

Fredriksson, Lars O. A., to K A Bergs Smide AB. Coupling unit. 4,134,256, Cl. 59-93.000.

Freeman, Warren R., to Kup Kap, Inc. Container capping apparatus and method therefor. 4,134,248, Cl. 53-298.000.

Frey, Thomas M., to Xerox Corporation. Rotary head magnetic recording at fixed wavelength with varying speeds. 4,135,194, Cl. 346-74.100.

Frieberg, Bengt O.; and Herpolsheimer, Arthur B. Locking device for threaded fasteners. 4,134,438, Cl. 151-35.000.

Friedman, Alan M. Method and apparatus for generating complex visual patterns. 4,135,203, Cl. 358-93.000.

Friedman, Harvey S., to Polaroid Corporation. Film unit deflection system for self developing camera. 4,134,655, Cl. 354-86.000.

Friedman, Herbert, to Brugail Licensing Company. Single size display carton for packaging either a tape cassette or tape cartridge. 4,134,495, Cl. 206-387.000.

Fries, Donald J. Structural panels. 4,134,243, Cl. 52-596.000.

Frigo, Domenico, to FIAMM S.p.A. Fabbrica Italiana Accumulatori Motocarri Montecchio. Method of making an electromagnetic sound generator. 4,134,200, Cl. 29-594.000.

Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,134,988, Cl. 424-273.00R.

Frohler, Hanns; and Rossberger, Erwin, to Dipl.-ing. Hanns Frohler KG. Process for electrolysis. 4,134,805, Cl. 204-82.000.

Frykhult, Rune H., to AB Celleco. Hydrocyclone separator. 4,134,827, Cl. 209-211.000.

Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, to Hoechst Aktiengesellschaft. Phenyl-azo-phenyl dyestuffs. 4,134,887, Cl. 260-205.000.

Fuji Photo Film Co., Ltd.: *See*—
Akashi, Goro; Fujiyama, Masaaki; and Utumi, Masahiro, 4,135,031, Cl. 428-323.000.
Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,135,032, Cl. 428-328.000.
Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, 4,135,036, Cl. 428-413.000.
Nakamura, Matsuaki; Kitamoto, Tatsuji; Tamai, Yasuo; and Kurokawa, Koshu, 4,135,218, Cl. 360-127.000.
Ogawa, Hiroshi; Nakamura, Matsuaki; Aonuma, Masashi; and Tamai, Yasuo, 4,135,016, Cl. 428-64.000.
Oosake, Shigenori; Murakoshi, Makoto; and Komura, Tsuneo, 4,134,675, Cl. 355-54.000.

Fuji Photo Optical Co., Ltd.: *See*—
Yoshino, Takeshi, 4,134,656, Cl. 354-163.000.

Fujie, Masakatsu; Honma, Kazuo; and Matsuzaki, Atsushi, to Hitachi, Ltd. Automatic molten metal pouring apparatus. 4,134,444, Cl. 164-155.000.

Fujikawa, Kanichi: *See*—
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,134,751, Cl. 71-94.000.

Fujimaki, Shigeaki: *See*—
Mukasa, Masayoshi; and Fujimaki, Shigeaki, 4,134,430, Cl. 138-109.000.

Fujimori, Noboru: *See*—
Sakazume, Kaiichiro; Fujimori, Noboru; Sakamoto, Eiichi; and Ishikawa, Hidehiko, 4,134,767, Cl. 96-60.00R.

Fujimoto, Sakae, to Ricoh Co., Ltd. Sheet clamp apparatus. 4,135,198, Cl. 346-138.000.

Fujimura, Itaru; and Endo, Katutoshi, to Ricoh Co., Ltd. Selenium-base photosensitive materials for electrophotography having super-finished substrate. 4,134,763, Cl. 96-1.50R.

Fujiyama, Masaaki: *See*—
Akashi, Goro; Fujiyama, Masaaki; and Utumi, Masahiro, 4,135,031, Cl. 428-323.000.
Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,135,032, Cl. 428-328.000.

Fukasawa, Noburu: *See*—
Iizuka, Haruhiko; and Fukasawa, Noburu, 4,134,261, Cl. 60-276.000.

Fukushima, Takashi: *See*—
Suzuki, Takami; and Fukushima, Takashi, 4,134,692, Cl. 400-144.200.

Fulkerson, David E., to Honeywell Inc. Logic transition circuits. 4,135,103, Cl. 307-207.000.

Fumoto, Syozo; Shimizu, Tetsuo; and Ichiba, Shigeru, to Daikin Kogyo Kabushiki Kaisha. Modified tetrafluoroethylene polymer and process for producing same. 4,134,995, Cl. 260-884.000.

Furstenberg, Joachim, to LTG Lufttechnische GmbH. Air cleaning apparatus. 4,134,745, Cl. 55-303.000.

Furukawa Electric Co., Ltd., The: *See*—
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.

Furuno, Akihisa: *See*—
Otani, Hisao; Furuno, Akihisa; and Ohshima, Iwao, 4,134,871, Cl. 260-29.60H.

Futaki, Kiyoshi: *See*—
Emoto, Kazuhiro; Yabuta, Kenji; Yamashita, Kiyoshi; and Futaki, Kiyoshi, 4,134,770, Cl. 96-100.00R.

Futers, Lionel H.; and Beaumont, Robert P. Automatic feeding apparatus. 4,134,365, Cl. 119-51.500.

Fuzesi-Kurtos, Irene: *See*—
Csudor, Rosa, 4,134,352, Cl. 112-262.000.

G-C Dental Industrial Corp.: *See*—
Kubota, Takao, 4,134,930, Cl. 260-875.000.

G. D. Searle & Co.: *See*—
Yonan, Peter K., 4,134,890, Cl. 260-239.0BA.

G.D. Societa per Azioni: *See*—
Seragnoli, Enzo, 4,134,502, Cl. 214-6.0BA.

GAF Corporation: *See*—
Lorenz, Donald H.; Tu, Shu T.; and Wyman, Donald P., 4,135,007, Cl. 427-44.000.

Gagliani, Laurence O., to Tektronix, Inc. Pulse width normalizer. 4,135,160, Cl. 328-58.000.

Galician, Kenneth M. Eye-patching method and device. 4,134,401, Cl. 128-163.000.

Gall, John J.: *See*—
Branen, Kenneth E.; and Gall, John J., 4,135,035, Cl. 428-377.000.

Gallaro, Anthony V.: *See*—
Fisher, Mahlon B.; Gallaro, Anthony V.; and Williams, George N., 4,135,112, Cl. 313-470.000.

Gamst, Einar, to Ditlev-Simonsen, O., Jr. Jet pipe. 4,134,547, Cl. 239-404.000.

Ganser, Friedrich: *See*—
Laar, Erwin; and Ganser, Friedrich, 4,134,663, Cl. 354-298.000.

Gardner, William B.; and Kniat, John, to United Technologies Corporation. Fuel manifold prefill. 4,134,259, Cl. 60-241.000.

Garrett Corporation, The: *See*—
Jacobsen, Fred W.; Jakubowski, Stanley T.; and Weiner, Herman S., 4,134,195, Cl. 29-157.30R.
Riple, James C., 4,134,257, Cl. 60-39.030.

Garrett, Robert R.: *See*—
Kastilahn, William W.; Garrett, Robert R.; and Park, Vernon L., 4,135,053, Cl. 13-25.000.

Gas Developments Corporation: *See*—
Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., 4,134,743, Cl. 55-34.000.

Gebr. Hofmann G.m.b.H. KG, Maschinenfabrik: *See*—
Honlinger, Herwig; and Wenz, Friedrich, 4,134,292, Cl. 73-146.000.

Gelbein, Abraham P.: *See—*
Barchas, Richard K.; Gelbein, Abraham P.; and Santore, William J., 4,134,910, Cl. 260-465.00H.
General Bathroom Products Inc.: *See—*
Palka, James J., 4,134,625, Cl. 312-206.000.
General Dynamics Corporation: *See—*
Piesik, Edward T., 4,134,327, Cl. 89-1.800.
General Electric Company: *See—*
Anthony, Thomas R.; and Cline, Harvey E., 4,135,027, Cl. 428-195.000.
Bogacki, Anthony P.; Farnsworth, Richard G.; Hardy, Samuel G.; Robinson, Paul B.; and Stutt, Charles A., 4,135,181, Cl. 340-310.00A.
Borom, Marcus P., 4,134,777, Cl. 134-2.000.
Crouch, Donald W., 4,135,071, Cl. 200-275.000.
Driskill, Roger D., 4,134,714, Cl. 425-113.000.
Eskesen, John H., 4,134,709, Cl. 416-1.000.
Irwin, John M., 4,135,249, Cl. 364-758.000.
Kelley, Fred W., Jr., 4,135,128, Cl. 323-124.000.
Krause, Werner A.; and Johnston, Frank C., 4,134,633, Cl. 339-22.00B.
McMannis, William T., 4,135,246, Cl. 364-551.000.
Philp, Sanborn F., 4,135,173, Cl. 336-220.000.
Sheng, William W.; Sun, Y. S. Edmund; and Tefft, Edward G., 4,134,778, Cl. 148-1.500.
Snyder, Paul V., 4,135,179, Cl. 338-28.000.
Thornton, Roy F., 4,135,040, Cl. 429-191.000.
General Motors Corporation: *See—*
Kibler, Roland G.; and Hartfelder, Bruce C., 4,134,373, Cl. 123-102.000.
Kingsley, Charles A., 4,134,378, Cl. 123-136.000.
Lefebvre, Arthur H.; Reider, Samuel B.; and Tomlinson, Jerry G., 4,134,260, Cl. 60-261.000.
Riddel, John W., 4,134,470, Cl. 180-108.000.
General Scanning, Inc.: *See—*
Brosens, Pierre J., 4,135,119, Cl. 318-128.000.
General Steel Industries, Inc.: *See—*
Jackson, Keith L., 4,134,343, Cl. 105-167.000.
General Tire & Rubber Company, The: *See—*
Kalafus, Edward F.; and Sharma, Satish C., 4,134,869, Cl. 260-29.300.
Genrikh, Georgy A.; Nikonets, Leonid A.; Dostman, Lev S.; and Korenev, Vsevolod T., to Lvovsky Politekhnichesky Institut. Ice melting circuit arrangement for a high-voltage transmission network. 4,135,221, Cl. 361-1.000.
Geomet Exploration, Inc.: *See—*
Milly, George H., 4,135,092, Cl. 250-343.000.
George, Lonnie L. Brick blending method and apparatus. 4,134,485, Cl. 198-456.000.
Georgia-Pacific Corporation: *See—*
Ehrlich, Stanley V.; and Ehrlich, John T., 4,134,556, Cl. 241-79.300.
Geoservices: *See—*
Patillet, Jean; and Issenmann, Olivier, 4,134,294, Cl. 73-153.000.
Geosource Inc.: *See—*
Jones, John D. P.; Smither, Miles A.; and Codding, Elias H., 4,134,498, Cl. 209-564.000.
Gerdes GmbH & Co.: *See—*
Heling, Paul, 4,134,205, Cl. 30-287.000.
Gerstenmaier, John H.: *See—*
Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., 4,134,783, Cl. 156-396.000.
Gestetner Limited: *See—*
Selman, Thomas G., 4,134,338, Cl. 101-122.000.
Gianakakos, Spiros; Rosen, Neil H.; and Siminuk, Paul, to Johnson & Johnson. Orthopedic bandage. 4,134,397, Cl. 128-90.000.
Giardino, Pietro: *See—*
Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, 4,134,903, Cl. 260-365.000.
Gibson, Harry W.; Bailey, Frank C.; and Mincer, Joseph L., to Xerox Corporation. Tribo modified toner materials via acylation. 4,134,760, Cl. 96-1.0SD.
Giesselmann, Hannes, to Husqvarna Aktiebolag. Sewing machine. 4,134,351, Cl. 112-158.00A.
Gildemeister Corpoplast GmbH: *See—*
Appel, Adolf; and Reymann, Wolfgang, 4,134,950, Cl. 264-523.000.
Gillette Company, The: *See—*
Buchholz, Alexis E., 4,134,202, Cl. 30-43.920.
Gillow, George B.: *See—*
Ward, William P.; and Gillow, George B., 4,135,242, Cl. 364-200.000.
Gingerich, Larry T.; Thompson, John H.; and Whittaker, Robert H., to Westinghouse Electric Corp. High powered piezoelectric cylindrical transducer with threads cut into the wall. 4,135,109, Cl. 310-369.000.
Giordano, Ames F. Electronic-optical system for X-ray object cross section image reconstruction. 4,135,096, Cl. 250-445.00T.
Girling Limited: *See—*
Asquith, Anthony, 4,134,477, Cl. 188-73.300.
Glaser, Paul F.; and Orford, Richard J., to Transaction Technology, Inc. Transaction terminal. 4,134,537, Cl. 235-379.000.
Glover, Brian: *See—*
Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,134,723, Cl. 8-41.00C.
Glover, Max H.: *See—*
Welch, Kenneth L., 4,134,225, Cl. 43-100.000.
Gnora, G. Michael: *See—*
Iaconetti, Frank A.; Gnora, G. Michael; and Novak, Carl J., 4,134,285, Cl. 72-84.000.
Godard, Bruno, to Compagnie Generale d'Electricite S.A. Laser having a brief discharge between two elongated electrodes. 4,135,167, Cl. 331-94.5PE.
Goehle, Rolf: *See—*
Ebel, Herbert; Goehle, Rolf; and Schmitt, Volker, 4,135,134, Cl. 335-20.000.
Goel, Rajeshwar P.; Vota, Terry L.; and Lynch, Thomas J., to Westinghouse Electric Corp. Method and apparatus for fabricating vent plate having bow-tie slot arrangement. 4,134,317, Cl. 83-35.000.
Goell, James E.: *See—*
Kao, Charles K.; and Goell, James E., 4,134,641, Cl. 350-96.210.
Goetz, Alexander F. H.; and Landauer, Frederick P., Jr., to United States of America, National Aeronautics and Space Administration. Multispectral imaging and analysis system. 4,134,683, Cl. 356-407.000.
Goldschmidt, Klaus: *See—*
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Goodrich, William F.; Ingersoll, Robert C.; and Doman, Donald W., to Dick Blick Company. Centrifugal casting apparatus. 4,134,445, Cl. 164-287.000.
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Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., 4,134,783, Cl. 156-396.000.
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Rye, Grover W.; Scarpitti, Anthony J.; and Kersker, Theodore M., 4,134,726, Cl. 8-139.100.
White, John R., 4,135,180, Cl. 366-336.000.
Gordon, Bernard M.; Neumann, Leopold; and Dobbs, John McG., to Siemens Aktiengesellschaft. Tomography signal processing system. 4,135,247, Cl. 364-414.000.
Gorin, Everett, to Continental Oil Company. Maintenance of solvent balance in coal liquefaction process. 4,134,821, Cl. 208-8.000.
Gorin, Everett, to Continental Oil Company. Method for producing hydrocarbon fuels from heavy polynuclear hydrocarbons by use of molten metal halide catalyst. 4,134,826, Cl. 208-108.000.
Gorivaerk AS: *See—*
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Rys, Tadeusz, 4,135,135, Cl. 335-46.000.
Graham, Glen D.; and Sklarz, William A., to Merck & Co., Inc. Freeze-drying process for the preparation of meningococcus vaccine without degradation of potency. 4,134,214, Cl. 34-5.000.
Grain, Claude: *See—*
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Grasshoff, J. Michael; and Reid, Jerome L., to Polaroid Corporation. Photographic uses of polyvinyl-phenylmercapto-tetrazoles. 4,134,768, Cl. 96-73.000.
Greber, Gerd: *See—*
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Green, Glen R.: *See—*
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Green, Robert S.; Dozier, Harold W.; and McKenny, Vernon G., to Mostek Corporation. High performance inverter circuits. 4,135,102, Cl. 307-205.000.
Greenberg, Jack, to A. H. Robins Company, Incorporated. Method for producing insect-combatting device. 4,134,977, Cl. 424-78.000.
Greer Hydraulics, Inc.: *See—*
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Gregory, Robert O.: *See—*
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Greif Bros. Corporation: *See—*
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Greve, Peter F.; and Opheij, Willem G., to U.S. Philips Corporation. Apparatus for reading an optical radiation-reflecting record carrier including a narrow focus control beam. 4,135,207, Cl. 358-128.000.
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Grillo, Joseph A., to Cutting Room Appliances Corporation. Brake construction for cloth-laying machine. 4,134,558, Cl. 242-75.430.
Grimes, Jerry W., to Westinghouse Electric Corp. Electrical inductive apparatus. 4,135,172, Cl. 336-197.000.
Grone, Robert J., to Cincinnati Milacron Inc. Workpiece detection circuit. 4,134,486, Cl. 198-466.000.
Gross, Paul; Konrad, Eugen; and Mager, Herbert, to Wella Aktien-

gesellschaft. Hair setting lotion containing a chitosan derivative. 4,134,412, Cl. 132-7.000.
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., to Phd, Inc.; and Hughes Industrial Products, Inc., part interest to each. Rotary actuator. 4,134,306, Cl. 74-29.000.
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Guigan, Jean. Hospital bed. 4,134,168, Cl. 5-369.000.
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Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, to Siemens Aktiengesellschaft. Starting device for a reformed gas generator. 4,134,739, Cl. 48-107.000.
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Gupalo, Jury D.; Nagaitsev, Vladimir A.; Troitsky, Vladimir A.; Bely, Nikolai G.; Parshin, Dmitry N.; and Zhinzhikov, Pavel A. Transformer control device. 4,135,123, Cl. 323-56.000.
Gussefeld, Horst; and Christoph, Heinz, to Siemens Aktiengesellschaft. Device for distributing flowing media over a flow cross section. 4,134,425, Cl. 137-625.300.
Guthrie, James F., to Flow Technology, Inc. Turbine flowmeter. 4,134,298, Cl. 73-231.00R.
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Gutman, Arnold D., to Stauffer Chemical Company. 5-Cyclopropane carboxylate oxadiazoles as insecticides and acaricides. 4,134,985, Cl. 424-272.000.
Gutridge, Jack E.; and Marulic, Walter J., to Pullman Incorporated. Sliding door for railway passenger car compartment. 4,134,233, Cl. 49-411.000.
Gyory, Kalman. Safety helmet. 4,134,156, Cl. 2-413.000.
Hadley, Dawson N., to Edelbrock-Hadley Corporation. Fuel injection control system. 4,134,368, Cl. 123-32.0EA.
HAG Aktiengesellschaft: *See—*
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Halderson, Alfred. Skin protective device. 4,134,399, Cl. 128-132.00R.
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Handa, Kiyoyasu; and Yuzuriha, Hiroaki, to Aichi Spinning Co., Ltd. Method and apparatus for winding roving with constant tension on bobbin on bobbin-lead type roving frame. 4,134,253, Cl. 57-96.000.
Handtmann, Dieter; and Raabe, Gotthold, to Robert Bosch GmbH. Pressure differential indicating apparatus for a hydraulic measuring bridge and its associated measuring piston. 4,134,293, Cl. 73-168.000.
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Hanna, Gary D. Panel system and components. 4,134,564, Cl. 248-243.000.
Hanrahan, James R., Jr.; and Levine, Richard G., to Air Industries. Injection molding footwear. 4,134,955, Cl. 264-244.000.
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Hansen, Harold M.; and Towns, Edward J., to Southern Can Company. Vented piston for barrier pressure containers. 4,134,523, Cl. 222-389.000.
Hara, Atsushi; Takeuchi, Tatsuaki; and Ogata, Jun-ichi, to Nippon Kokan Kabushiki Kaisha. Method of joining coated large-diameter steel pipes laid underground. 4,134,529, Cl. 228-175.000.
Harada, Yoshiaki; Okamura, Kazuo; and Kondo, Masahiro, to Konishiroku Photo Industry Co., Ltd. Method and apparatus for detecting concentration of liquid. 4,135,100, Cl. 250-573.000.
Hardy, Samuel G.: *See—*
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Hase, Yoshifumi: *See*—
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Hauser, Hans; and Violet, Jon A., to J. B. Foote Foundry Co., The. Portable cement mixer. 4,134,686, Cl. 366-47.000.

Hausknecht, Louis A. Valve control system. 4,134,371, Cl. 123-90.430.

Hautau, Charles F. Apparatus for intermittently rotating and moving a member. 4,134,305, Cl. 74-24.000.

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Hayes, Dwight R., Jr.; and Whitney, Richard R., to Gulf Oil Corporation. Process for treatment of olefin polymer fibrils. 4,134,931, Cl. 260-897.00B.

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Heavner, William D., to Container Corporation of America. Stackable container. 4,134,533, Cl. 229-34.00R.

Heckel, Claus; Wimmer, Dieter; and Knabe, Frank, to International Standard Electric Corporation. Circuit arrangement for a time division multiplex communication system for the channel by channel combination at the receiving end of information transmitted in the form of multiframes. 4,135,060, Cl. 179-15.0BY.

Heermans, Thomas W., to Regal Ware, Inc. Audible signal valve knob. 4,134,358, Cl. 116-70.000.

Heese, Dieter; Hausberg, Gerhard; Lehmann, Hans; Schmidt, Hans-Joachim; Goldschmidt, Klaus; and Than, Kyaw, to STEAG Aktiengesellschaft. Aggregate for concrete and concrete composition containing same. 4,134,774, Cl. 106-97.000.

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Heimberger, Helmut, to Optilon W. Erich Heilmann GmbH. Warp-knit slide-fastener stringer half and method of making same. 4,134,185, Cl. 24-205.16C.

Heimreid, Ken. Method and device for treatment of blood. 4,134,832, Cl. 210-78.000.

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Heltemes, Eugene C., to Minnesota Mining and Manufacturing Company. Antipilferage system utilizing "figure-8" shaped field producing and detector coils. 4,135,183, Cl. 340-572.000.

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Herr, Roy W., to Oxy Metal Industries Corporation. Electrolyte and method for electrodepositing bright metal deposits. 4,134,802, Cl. 204-43.00T.

Herzl, Peter J., to Fischer & Porter Company. Two-wire transmission system for vortex-type flowmeters. 4,134,297, Cl. 73-194.0S..

Hess, Hans-Jurgen E.: *See*—
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Hess, Peter; and Mees, Bernhard, to Hoechst Aktiengesellschaft. Process for preparing anthranilic acid esters. 4,135,050, Cl. 560-19.000.

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Hiestand, Armin; and Rohringer, Peter, to Ciba-Geigy Corporation. Process for fireproofing synthetic fiber materials with sulphonamides. 4,135,028, Cl. 428-253.000.

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Hileman, Kenneth R., to Lynch Corporation. Linkage for operating a mold for a glass making machine. 4,134,748, Cl. 65-237.000.

Hillenbrandt, Siegfried; and Keppeler, Dieter, to Carl Walther GmbH. Electrical trigger mechanism for firearms. 4,134,223, Cl. 42-84.000.

Hillis, James E.; and Coker, William P., to Dow Chemical Company, The. Process for preparing alkali metal mono- and dibasic periodates. 4,134,967, Cl. 423-462.000.

Hillman, John J.: *See*—
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HILTI Aktiengesellschaft: *See*—
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Hindin, Saul G.; and Dettling, Joseph C., to Engelhard Minerals & Chemicals Corporation. Catalyst manufacture. 4,134,860, Cl. 252-466.0PT.

Hinners, Earl S. Locking structure for extensible pole. 4,134,703, Cl. 403-104.000.

Hinson, James E., to Bulbex Corporation. Process for repairing lead-in wires of electric light bulbs. 4,134,630, Cl. 316-2.000.

Hirai, Yutaka: *See*—
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Hiramatsu, Katsuzo, to Mitsubishi Denki Kabushiki Kaisha. Automatically operated record player system. 4,134,593, Cl. 274-9.00A.

Hirano, Reiji, to Canon Kabushiki Kaisha. System for clearing input data in electronic computer. 4,135,250, Cl. 364-900.000.

Hirano, Reiji: *See*—
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Hirata, Yasuyuki: *See*—
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Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, 4,134,658, Cl. 354-266.000.

Hiromoto, Akira: *See*—
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.

Hitachi Cable Ltd.: *See*—
Yamaji, Kenkichi; Dietrich, Oelhschlagel; Abe, Hajime; and Tamura, Koichi, 4,134,196, Cl. 29-420.000.
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Fujie, Masakatsu; Honma, Kazuo; and Matsuzaki, Atsushi, 4,134,444, Cl. 164-155.000.
Ishikawa, Isao; Itoh, Michiyasu; and Usami, Katsuhisa, 4,135,088, Cl. 250-307.000.
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Takahashi, Masahiro; and Yanaka, Masao, 4,135,149, Cl. 340-147.00R.
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
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Ushijima, Makoto, 4,134,756, Cl. 75-122.000.
Hobart Corporation: *See*—
Kordes, Myron G., 4,134,626, Cl. 312-214.000.
HOBEG Hochtemperaturreaktor-Brennelement GmbH: *See*—
Hrovat, Milan; Becker, Hans-Joachim; and Huschka, Hans, 4,134,941, Cl. 264-0.500.
Hobo, Nobuhito; Hasegawa, Takashi; Tsuzuki, Yoshihiko; and Suzuki, Yutaka, to Nippondenso Co., Ltd. Fuel control system. 4,134,258, Cl. 60-39.140.
Hodges, Joseph L.; and Green, Glen R., to Ore-Ida Foods, Inc. Method of strip cutting raw potatoes. 4,135,002, Cl. 426-482.000.
Hoechst Aktiengesellschaft: *See*—
Bajwa, Balbir S.; Bhat, Sujata V.; Dornauer, Horst; and de Souza, Noel J., 4,134,986, Cl. 424-283.000.
Ehlers, Klaus P.; and Heymer, Gero, 4,134,964, Cl. 423-321.00R.
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Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,134,887, Cl. 260-205.000.
Hess, Peter; and Mees, Bernhard, 4,135,050, Cl. 560-19.000.
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,134,753, Cl. 71-108.000.
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Hofer, Franz; and van der Hoorn, Gustaaf H. A., to U.S. Philips Corporation. Terminal connections on microcircuit chips. 4,134,801, Cl. 204-15.000.
Hoffmann, Dennis, Sr. Laminate patch. 4,135,017, Cl. 428-78.000.
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Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,134,972, Cl. 424-177.000.
Hromatka, Otto; Binder, Dieter; Pfister, Rudolf; and Zeller, Paul, 4,134,898, Cl. 260-332.20C.
Leeder, Geoffrey M. A., 4,134,922, Cl. 260-606.50F.
Hoffmann, Otto L., to Gulf Oil Corporation. Method of combating wild oats. 4,134,754, Cl. 71-111.000.
Hoffmeister-Leuchten K. G.: *See*—
Berkenhoff, Hans-Peter, 4,135,232, Cl. 362-306.000.
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Hohsho, Yukio: *See*—
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Hollemann, Karl. Method and device for utilizing waste heat. 4,134,267, Cl. 60-648.000.
Holmes, Kenneth P., to Esquire, Inc. Electronic protection circuit. 4,135,223, Cl. 361-56.000.
Holmes, Roger G.: *See*—
Hansen, George E., 4,134,629, Cl. 312-246.000.
Holmquist, John R.; and Sherman, John E., to Weyerhaeuser Company. Method and apparatus for heating electrical motors and like devices. 4,135,122, Cl. 318-436.000.
Homeyer, Bernhard: *See*—
Schmidt, Karl-Julius; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,134,978, Cl. 424-200.000.
Honeywell Inc.: *See*—
Fulkerson, David E., 4,135,103, Cl. 307-207.000.
Shafer, Donald E., 4,135,208, Cl. 358-130.000.
Honlinger, Herwig; and Wenz, Friedrich, to Gebr. Hofmann G.m.b.H. KG, Maschinenfabrik. Tire testing apparatus. 4,134,292, Cl. 73-146.000.
Honma, Kazuo: *See*—
Fujie, Masakatsu; Honma, Kazuo; and Matsuzaki, Atsushi, 4,134,444, Cl. 164-155.000.
Hooper, David C.; Johnson, George A.; and Peter, Donald, to Lever Brothers Company. Fabric conditioning product. 4,134,838, Cl. 252-8.800.
Hopkins, Gary L.: *See*—
Smedley, Daniel G.; Hopkins, Gary L.; and Urban, John A., 4,134,621, Cl. 303-96.000.
Hopkinson, Dennis, to Access Control Systems Pty Ltd. Code identification apparatus. 4,134,539, Cl. 235-449.000.
Hopping, John W.: *See*—
Nelson, Joseph E., 4,134,612, Cl. 296-84.00B.
Horacek, Oldrich; Silar, Frantisek; and Rychlik, Dalibor, to Statni vyzkumny ustav textilni. Apparatus for producing knit-woven fabric selvage structure. 4,134,433, Cl. 139-383.00B.
Hori, Osamu: *See*—
Yamanaka, Teruo; and Hori, Osamu, 4,135,066, Cl. 200-19.00R.
Horie, Masayoshi; and Yamazaki, Kikuto, to Sumitomo Bakelite Company Limited. Thermosetting resin injection molding machine and method. 4,134,688, Cl. 366-81.000.
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, to Hoechst Aktiengesellschaft. Herbicidal agents. 4,134,753, Cl. 71-108.000.
Horner, Patrick J.; and Rashbrook, Robert B., to Imperial Chemical Industries Limited. Phosphorus and linear polyester compositions and products containing them. 4,134,876, Cl. 260-45.70P.
Horowitz, Charles, to Sloan Valve Company. Quick release valve. 4,134,417, Cl. 137-102.000.
Horsch, Joachim, to International Harvester Company. Lubricant cooled friction clutch with two rates of flow. 4,134,483, Cl. 192-113.00B.
Horster, Horst: *See*—
Mahdjuri, Faramarz; Horster, Horst; and Kersten, Reinhard, 4,134,391, Cl. 126-271.000.
Horvath, Jeno: *See*—
Dancso, Laszlo; Kocsis, Oliver; Horvath, Jeno; and Banszki, Miklos, 4,134,350, Cl. 112-110.000.
Hoshimi, Susumu; and Sato, Toshio, to Sony Corporation. Drive circuit for a brushless motor. 4,135,120, Cl. 318-138.000.
Hotchen, L. Blair. Rotary cutting equipment. 4,134,459, Cl. 173-32.000.
Houdstermaatschappij Alex A. Logges B.V.: *See*—
Loggers, Jan N. H., 4,134,194, Cl. 29-149.50R.
Houser, John E., to Aerotherm, Inc. Composting apparatus with comminution, moisture control, and mascerator means. 4,134,731, Cl. 195-127.000.
Houser, John E.; and Kramer, Ralph J., to Aerotherm, Inc. Organic waste material digestion apparatus and system. 4,134,749, Cl. 71-9.000.
Howat, Colin S., III, to Goodyear Tire & Rubber Company, The. Acetylenes removal from diolefin streams by extractive distillation. 4,134,795, Cl. 203-53.000.
Hoyt, John M.; and Fischer, Joseph, to National Distillers and Chemical Corp. Alcoholyzed ethylene-vinyl acetate packaging material. 4,135,026, Cl. 428-220.000.
Hromatka, Otto; Binder, Dieter; Pfister, Rudolf; and Zeller, Paul, to Hoffmann-La Roche Inc. N-Carbalkoxymethylsulfamoyl thiophene carboxylic acid alkyl esters. 4,134,898, Cl. 260-332.20C.
Hrovat, Milan; Becker, Hans-Joachim; and Huschka, Hans, to HOBEG Hochtemperaturreaktor-Brennelement GmbH. Spherical fuel elements made of graphite for temperature reactors and process for reworking it after the irradiation. 4,134,941, Cl. 264-0.500.
Hsieh, Henry L.: *See*—
Udipi, Kishore; and Hsieh, Henry L., 4,135,037, Cl. 428-414.000.
Huffman, William A.; Birkeland, Stephen P.; and O'Leary, Kevin P., to Minnesota Mining and Manufacturing Company. Semiconductive and sensitized photoconductive compositions. 4,134,764, Cl. 96-1.600.
Hughes Industrial Products, Inc.: *See*—
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., 4,134,306, Cl. 74-29.000.
Hull, Charles W., to Du Pont de Nemours, E. I., and Company. Method and apparatus for rejuvenating ion sources. 4,135,094, Cl. 250-427.000.
Humphrey, Marshall F.: *See*—
United States of America, National Aeronautics and Space Administration; and Humphrey, Marshall F., 4,134,786, Cl. 162-14.000.
Hung, Ling K.: *See*—
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Burlew, Leroy E.; Reid, Michael G.; and Hunt, William E., 4,134,672, Cl. 355-14.000.
Hunter, Byron A., to Uniroyal, Inc. Sulfonyl carbazates as blowing agents. 4,135,049, Cl. 560-13.000.
Hunter Engineering Company: *See*—
Hunter, Lee; and Senften, David A., 4,134,680, Cl. 356-121.000.
Hunter, Lee; and Senften, David A., to Hunter Engineering Company. Vehicle headlight testing apparatus. 4,134,680, Cl. 356-121.000.
Huppatz, John L. Compounds and compositions. 4,134,987, Cl. 424-273.00P.
Huschka, Hans: *See*—
Hrovat, Milan; Becker, Hans-Joachim; and Huschka, Hans, 4,134,941, Cl. 264-0.500.
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Giesselmann, Hannes, 4,134,351, Cl. 112-158.00A.
Huss, Lennart: *See*—
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Hutchins, Thomas G.: *See*—
Badberg, Melvin C.; Hutchins, Thomas G.; Olsen, Roy W.; and Zachmeyer, James W., 4,134,784, Cl. 156-423.000.
Hutchinson, Florence M., executrix: *See*—
Hutchinson, William M., deceased; and Hutchinson, Florence M., executrix, 4,134,849, Cl. 252-171.000.
Hutchinson, William M., deceased; and by Hutchinson, Florence M., executrix, to Phillips Petroleum Company. Constant boiling admixtures. 4,134,849, Cl. 252-171.000.

Hutton, Peter G. Device for computing musical relationships. 4,134,326, Cl. 84-474.000.
Hutton, Ronald E.: *See—*
Burley, Joseph W.; Hutton, Ronald E.; and Oakes, Vincent, 4,134,878, Cl. 260-45.75S.
Hwa, Chih M.: *See—*
Menke, Russell O.; Jacob, Jose T.; and Hwa, Chih M., 4,134,959, Cl. 422-16.000.
Hydrotile Canada Limited: *See—*
Christian, Alfred W., 4,134,568, Cl. 249-118.000.
I.O.S. Industria Ossidi Sinterizzati S.r.l.: *See—*
Lazzari, Armando; Cartoceti, Alfredo; and Steinort, Eberhart, 4,134,557, Cl. 241-170.000.
Steinort, Eberhart; Lazzari, Armando; and Cartoceti, Alfredo, 4,134,553, Cl. 241-34.000.
Iaconetti, Frank A.; Gnora, G. Michael; and Novak, Carl J., to Rogers Mfg. Co., The. Method and apparatus for producing multiple groove pulleys. 4,134,285, Cl. 72-84.000.
Ichiba, Shigeru: *See—*
Fumoto, Syozo; Shimizu, Tetsuo; and Ichiba, Shigeru, 4,134,995, Cl. 260-884.000.
Ichikawa, Hiroki; and Miyazi, Kazumi, to Olympus Optical Co., Ltd. Mechanism to prevent unwanted tape ejection in a magnetic tape device. 4,135,220, Cl. 360-137.000.
Ichiko, Tadatoshi; Isono, Takeo; and Mochizuki, Keiichi, to Narumi Seito Kabushiki Kaisha. Method of producing soft porcelain. 4,134,772, Cl. 106-45.000.
ICI Australia Limited: *See—*
Barnett, George H., 4,134,780, Cl. 149-40.000.
Jackson, Mervyn B.; and Bolto, Brian A., 4,134,815, Cl. 204-159.220.
Ideal Industries, Inc.: *See—*
Wells, Peter M., Jr., 4,135,080, Cl. 219-370.000.
Iden, Charles R.: *See—*
Flood, John D., 4,134,383, Cl. 124-24.00R.
IDR, Inc.: *See—*
Wintfeld, Leonard; and Nagel, Robert H., 4,135,213, Cl. 358-142.000.
Iglesias, Jose J. Cutting loop for suction resectoscopes. 4,134,406, Cl. 128-303.150.
Iijima, Tetsuya, to Nissan Motor Company, Limited. Control system for an automatic power transmission. 4,134,312, Cl. 74-865.000.
Iizuka, Haruhiko; and Fukasawa, Noburu, to Nissan Motor Company, Limited. Variable displacement closed loop fuel controlled internal combustion engine. 4,134,261, Cl. 60-276.000.
Ikegaki, Makoto: *See—*
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Illinois Tool Works Inc.: *See—*
McVey, John K.; Luxon, Bruce A.; and Sharp, Larry L., 4,135,176, Cl. 337-404.000.
Ilmoni, Pehr-Adrian; and Drugge, Roland, to Luossavaara-Kiirunavaara AB. Pellet-rolling method. 4,134,944, Cl. 264-37.000.
Imamura, Tetsuo: *See—*
Tomoshige, Toru; Nagano, Riichiro; and Imamura, Tetsuo, 4,134,927, Cl. 260-878.00R.
Immink, Kornelis A.: *See—*
Kleuters, Wilhelm J.; van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,135,206, Cl. 358-128.000.
Imperial Chemical Industries Limited: *See—*
Boyd, Violet; Fishwick, Brian R.; and Glover, Brian, 4,134,723, Cl. 8-41.00C.
Candlin, John P.; and Segal, John A. A. A. G., 4,134,855, Cl. 252-429.00B.
Horner, Patrick J.; and Rashbrook, Robert B., 4,134,876, Cl. 260-45.70P.
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Muhler, Joseph C.; Kleber, Carl J.; and Kelly, Ray G., 4,134,999, Cl. 426-3.000.
Ingersoll, Robert C.: *See—*
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Innovation Enterprises, Inc.: *See—*
Fariss, James D., Jr., 4,134,209, Cl. 33-1.00N.
Inoue, Shigeo; and Kondo, Mitsuo, to Kao Soap Co., Ltd. Germicidal, disinfecting and antiseptic compositions containing certain alkoxy aliphatic amine compounds. 4,134,971, Cl. 424-128.000.
Institut Francais du Petrole: *See—*
Courty, Philippe, 4,134,858, Cl. 252-455.00R.
Instrumentation Laboratory Inc.: *See—*
Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., 4,134,678, Cl. 356-39.000.
Intercontinental Dynamics Corporation: *See—*
Argentieri, Michael A.; and Lionetti, James G., 4,135,143, Cl. 340-27.00R.
International Business Machines Corporation: *See—*
Forneris, John L.; Hicks, William W.; Keller, John H.; McKenna, Charles M.; and Seirmarco, James A., 4,135,097, Cl. 250-492.00B.
Johnson, Frederick W.; Queener, Carl A.; and Rogers, James C., 4,134,581, Cl. 271-173.000.
International Harvester Company: *See—*
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International Nickel Company, Inc., The: *See—*
Turillon, Pierre P.; and Sandrock, Gary D., 4,134,490, Cl. 206-0.700.
Turillon, Pierre P.; and Sandrock, Gary D., 4,134,491, Cl. 206-0.700.
Volin, Timothy E., 4,134,852, Cl. 252-472.000.
International Paper Company: *See—*
Eckert, Robert C., 4,134,787, Cl. 162-72.000.
International Shoe Machine Corporation: *See—*
Becka, Michael M., 4,134,278, Cl. 69-6.500.
International Standard Electric Corporation: *See—*
Heckel, Claus; Wimmer, Dieter; and Knabe, Frank, 4,135,060, Cl. 179-15.0BY.
International Telephone & Telegraph Corp.: *See—*
Kao, Charles K.; and Goell, James E., 4,134,641, Cl. 350-96.210.
Interox Chemicals Limited: *See—*
McCrudden, Joseph E.; and Talbot, Robert E., 4,134,850, Cl. 252-186.000.
Intex Corp.: *See—*
Jette, Paul C., 4,134,684, Cl. 356-430.000.
Irwin, John M., to General Electric Company. Signed double precision multiplication logic. 4,135,249, Cl. 364-758.000.
Isaka, Tutomu: *See—*
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Ishiguro, Yasuo; and Kurosu, Tomio, to Copal Company Limited. Servoamplifier in an automatic diaphragm controlling device of a camera. 4,134,653, Cl. 354-42.000.
Ishihara Sangyo Kaisha Ltd.: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,134,751, Cl. 71-94.000.
Ishikawa, Hidehiko: *See—*
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Ishikawa, Isao; Itoh, Michiyasu; and Usami, Katsuhisa, to Hitachi, Ltd. Charged-particle analyzer. 4,135,088, Cl. 250-307.000.
Ishikawa, Kazuo, to Aisin Seiki Kabushiki Kaisha. Automatic transmission for automobiles. 4,134,313, Cl. 74-867.000.
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Ishikawa, Wataru: *See—*
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Ishitani, Hayao: *See—*
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.
Ishizaka, Sunao; and Kawahara, Yasuhito, to Nippon Kogaku K.K. Exposure indicating device in a single lens reflex camera having a built-in TTL exposure meter. 4,134,661, Cl. 354-289.000.
Isono, Takeo: *See—*
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Issenmann, Olivier: *See—*
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Iten, Walter A., to K. Iten AG. Screen-printing stencil. 4,134,339, Cl. 101-127.000.
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Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,134,654, Cl. 354-60.00R.
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Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
Ito, Tadashi: *See—*
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Ito, Takeo: *See—*
Tsuneta, Asahide; Ohta, Yasuo; Ikegaki, Makoto; and Ito, Takeo, 4,135,113, Cl. 313-470.000.
Itoh, Michiyasu: *See—*
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Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; and Obayashi, Takashi, to Toa Nenryo Kogyo Kabushiki Kaisha. Catalyst for hydro-refining hydrocarbon oils. 4,134,856, Cl. 252-439.000.
Itoh, Yoshimasa: *See—*
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.
Iversen, Ralph: *See—*
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Ivins, Earl E.; and Ivins, John L., to Engineers Sales-Service Co., Inc. Submersible pump apparatus. 4,134,711, Cl. 417-370.000.
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Ivins, Earl E.; and Ivins, John L., 4,134,711, Cl. 417-370.000.
Iwahashi, Toshio; Nakai, Kouji; and Tani, Yoshio, to Kubota, Ltd. Engine with air-cooled non-contact ignition system. 4,134,370, Cl. 123-41.310.
Iwatsuki, Masayuki: *See—*
Okano, Hiroshi; and Iwatsuki, Masayuki, 4,134,446, Cl. 165-9.000.
Izon Corporation: *See—*
Rosin, Seymour, 4,134,650, Cl. 353-27.00R.

Izzo, Carl P.: *See*—
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J. B. Foote Foundry Co., The: *See*—
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Violet, Jon A., 4,135,171, Cl. 366-60.000.
J C Schumacher Co.: *See*—
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Jaanson, Ernest: *See*—
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Jackley, Robert D.; and Perez, Richard T., to Deutsch Fastener Corp. Tapered hole cutter. 4,134,704, Cl. 408-57.000.
Jackson, Earl K.: *See*—
Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., 4,134,752, Cl. 71-103.000.
Jackson, Ian S.: *See*—
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Jackson, Keith L., to General Steel Industries, Inc. Radial axle railway truck. 4,134,343, Cl. 105-167.000.
Jackson Lift Co., Inc.: *See*—
Jackson, William E., 4,134,604, Cl. 280-704.000.
Jackson, Mervyn B.; and Bolto, Brian A., to ICI Australia Limited; and Commonwealth Scientific and Industrial Research Organization. Amphoteric composite resins and method of preparing same by polymerization of a two-phase dispersion of monomers. 4,134,815, Cl. 204-159.220.
Jackson, Robert G., to Continental Oil Company. Floating methanol plant. 4,134,732, Cl. 422-198.000.
Jackson, William E., to Jackson Lift Co., Inc. Vehicle suspension. 4,134,604, Cl. 280-704.000.
Jacob, Jose T.: *See*—
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Jacobi, John H.: *See*—
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Jacobi, Manfred: *See*—
Kuesters, Werner; Osterloh, Rolf; and Jacobi, Manfred, 4,134,813, Cl. 204-159.240.
Jacobsen, Fred W.; Jakubowski, Stanley T.; and Weiner, Herman S., to Garrett Corporation, The. Method of manifold construction for formed tube-sheet heat exchanger and structure formed thereby. 4,134,195, Cl. 29-157.30R.
Jacobsen Manufacturing Company: *See*—
Wuerker, Charles A.; Steingraber, Gary C.; and Woelffer, Neill C., 4,134,249, Cl. 56-255.000.
Jacques, James O.; and Halfhill, Martin O., to Xerox Corporation. Utilization of stored run-out information in a track following servo system. 4,135,217, Cl. 360-77.000.
Jahn-Csudor, Irene: *See*—
Csudor, Rosa, 4,134,352, Cl. 112-262.000.
Jakubowski, Stanley T.: *See*—
Jacobsen, Fred W.; Jakubowski, Stanley T.; and Weiner, Herman S., 4,134,195, Cl. 29-157.30R.
Jameco Industries, Inc.: *See*—
Okonowitz, Hyman, 4,134,420, Cl. 137-315.000.
Janson, Richard W. Curtain suspension assembly. 4,134,176, Cl. 16-94.00D.
Janson, Richard W. Counterweight carriage frame for stage curtains and the like. 4,134,177, Cl. 16-96.00D.
Janzow, Edward F.: *See*—
Cass, Robert A.; Butler, John M.; and Janzow, Edward F., 4,134,937, Cl. 260-862.000.
Japan Atomic Energy Research Institute: *See*—
Araki, Kunio; Makuuchi, Keizo; and Takagi, Tohru, 4,134,810, Cl. 204-159.150.
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.
Jarvis, Wilbur W.; and Toth, Leslie, to Whirlpool Corporation. Adjustable upper spray arm for dishwasher. 4,134,414, Cl. 134-144.000.
Jean, Leonard P.; and LaChance, Ernest J., Sr., to Hendrix Wire & Cable Corp. Device for stringing an electrical conductor in an insulator. 4,134,574, Cl. 254-134.30R.
Jeffrey Manufacturing Division Dresser Industries Canada Ltd.: *See*—
Bigney, Ernest N., 4,134,488, Cl. 198-827.000.
Jenkins, John F. Seating setup. 4,134,615, Cl. 297-180.000.
Jenkins, Jonathan M., to Unigate, Limited. Electrode structures and electrodes therefrom for use in electrolytic cells or batteries. 4,135,039, Cl. 429-27.000.
Jennings, Donald E.: *See*—
United States of America, National Aeronautics and Space Administration; Jennings, Donald E.; and Hillman, John J., 4,134,447, Cl. 165-30.000.
Jette, Paul C., to Intex Corp. Repeat defect detector system. 4,134,684, Cl. 356-430.000.
Joan Fabrics Corporation: *See*—
Damon, John F., Sr., 4,134,187, Cl. 26-2.00R.
John, Clarence D., Jr., to Westinghouse Electric Corp. Press apparatus. 4,134,716, Cl. 425-186.000.
John Wyeth & Brother Limited: *See*—
Crossley, Roger, 4,134,984, Cl. 424-270.000.
Johnnie, James L.; and DeKluyver, Peter J., to Continental Oil Company. Sulfur recovery plant. 4,134,735, Cl. 422-188.000.
Johns-Manville Corporation: *See*—
Bradley, Timothy G.; and McAdam, Raymond L., 4,134,857, Cl. 252-450.000.
Musz, Andrew; Hoehler, John A.; Hilt, Susan F.; and Kielmeyer, William H., 4,134,242, Cl. 52-309.100.
Johnsen, Clifford N., to Trane Company, The. System for producing refrigeration and a heated liquid and control therefor. 4,134,274, Cl. 62-179.000.
Johnsen, Frank R.; Barta, James R.; and Colner, Eugene J. Eye drop dispenser attachable positioner. 4,134,403, Cl. 128-233.000.
Johnson, Bernard A.; and Parkinson, Thomas M., to Mangood Corporation. In-motion car weighing system. 4,134,464, Cl. 177-3.000.
Johnson, Bruce C.: *See*—
McBain, Robert T.; and Johnson, Bruce C., 4,134,255, Cl. 59-78.000.
Johnson, Frederick W.; Queener, Carl A.; and Rogers, James C., to International Business Machines Corporation. Virtual bin collator control. 4,134,581, Cl. 271-173.000.
Johnson, George A.: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,134,838, Cl. 252-8.800.
Johnson & Johnson: *See*—
Gianakakos, Spiros; Rosen, Neil H.; and Siminuk, Paul, 4,134,397, Cl. 128-90.000.
Scrivens, George W., 4,134,398, Cl. 128-132.00D.
Johnson, Kenneth C., to F. J. Littell Machine Company. Automated lock device for press feed belt drives. 4,134,334, Cl. 100-48.000.
Johnston, Frank C.: *See*—
Krause, Werner A.; and Johnston, Frank C., 4,134,633, Cl. 339-22.00B.
Johnston, John K.; and Edwards, Frederick A. Ground fault circuit interruptor test apparatus. 4,135,129, Cl. 324-51.000.
Jolley, Paul E.; and Crumbliss, Robert T., to Spencer Wright Industries, Inc. Method and apparatus for tufting even level cut pile and loop pile in the same row of stitching. 4,134,347, Cl. 112-79.00R.
Jollois, Jean-Marie, to Labavia S.G.E. Eddy-current retarders whose stator comprises a ring of electro-magnets. 4,135,106, Cl. 310-105.000.
Jones, John D. P.; Smither, Miles A.; and Codding, Elias H., to Geosource Inc. Multiplexed sorting apparatus. 4,134,498, Cl. 209-564.000.
Jones, Raymond E., to Dura Corporation. Adjustable pad hydraulic lift. 4,134,475, Cl. 187-8.750.
Josse, Paul, to Compagnie Generale de Telegraphie Sans Fil. Random frequency radar system. 4,135,189, Cl. 343-18.00E.
Joswig, Siegfried, to Wolf-Gerate GmbH. Tool holder. 4,134,499, Cl. 211-66.000.
Jung, Margarete; Voss, Ernst; and Chobanov, Tsvetko, to Varta Batterie Aktiengesellschaft. Dust reduction for electrode plates. 4,135,041, Cl. 429-225.000.
Jung, Michel: *See*—
Bey, Philippe; and Jung, Michel, 4,134,918, Cl. 260-583.0GG.
K A Bergs Smide AB: *See*—
Fredriksson, Lars O. A., 4,134,256, Cl. 59-93.000.
K. E. Levin Maskin AB: *See*—
Larson, Ernst R., 4,134,340, Cl. 101-127.100.
K. Iten AG: *See*—
Iten, Walter A., 4,134,339, Cl. 101-127.000.
Kabel-und Metallwerke Gutehoffnungshuette: *See*—
Bahre, Werner; Stobaus, Karl H.; and Ziemek, Gerhard, 4,134,528, Cl. 228-115.000.
Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
Kobayashi, Mitsuo, 4,135,073, Cl. 200-315.000.
K.K. Shibaura Seisakusho: *See*—
Sakai, Tetsuo; Shiraishi, Shigezo; Kimura, Choichi; Nakajimi, Maki; and Sato, Hitoshi, 4,134,342, Cl. 104-12.000.
Kadatz, Rudolf: *See*—
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.
Kadin, Saul B.: *See*—
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,134,981, Cl. 424-251.000.
Kahler, Richard W. Liquid-filtered smoking device having liquid-surge preventing means incorporated therein. 4,134,410, Cl. 131-173.000.
Kaiser Aluminum & Chemical Corporation: *See*—
Rhoades, John S., 4,134,517, Cl. 220-268.000.
Kaiser, Emil T. Synthesis of steroids. 4,134,904, Cl. 260-397.100.
Kakimoto, Kohichi: *See*—
Ohsaki, Mikio; Kamada, Hiroshi; Kakimoto, Kohichi; Suzuki, Hitoshi; and Hakaridani, Mitsuhiro, 4,134,674, Cl. 355-43.000.
Kalafus, Edward F.; and Sharma, Satish C., to General Tire & Rubber Company, The. Vinyl pyridine latex stabilized with a resorcinol-formaldehyde novolak. 4,134,869, Cl. 260-29.300.
Kaluza, Hans J.: *See*—
Brauner, Dieter; Kaluza, Hans J.; and Muschelknautz, Edgar, 4,134,954, Cl. 264-176.00F.
Kamada, Hiroshi: *See*—
Ohsaki, Mikio; Kamada, Hiroshi; Kakimoto, Kohichi; Suzuki, Hitoshi; and Hakaridani, Mitsuhiro, 4,134,674, Cl. 355-43.000.
Kamatics Corporation: *See*—
Orkin, Stanley S.; and Nagy, Edward J., 4,134,842, Cl. 252-12.600.
Kamerbeek, Evert M. H.; and Lakerveld, Herman G., to U.S. Philips Corporation. Multi-phase alternating current machine with stepped stator. 4,135,107, Cl. 310-179.000.
Kamm, Gerard R.; and Tanaami, Kazuo, to Union Carbide Corporation. Integrated process for the partial oxidation-thermal cracking of crude oil feedstocks. 4,134,824, Cl. 208-92.000.

Kaneno, Masayuki: *See*—
Oda, Isao; and Kaneno, Masayuki, 4,134,947, Cl. 264-65.000.
Kansai Paint Company, Limited: *See*—
Tominaga, Akira, 4,134,865, Cl. 260-18.0PN.
Tominaga, Akira; and Hirata, Yasuyuki, 4,134,866, Cl. 260-18.0PN.
Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Oda, Shin-ichi; Okamoto, Tosaku; Nakanishi, Akira; and Kuroda, Takio, 4,134,847, Cl. 252-62.10P.
Kao, Charles K.; and Goell, James E., to International Telephone & Telegraph Corp. Self centering connector design. 4,134,641, Cl. 350-96.210.
Kao Soap Co., Ltd.: *See*—
Inoue, Shigeo; and Kondo, Mitsuo, 4,134,971, Cl. 424-128.000.
Minegishi, Yutaka; and Arai, Haruhiko, 4,134,840, Cl. 252-8.900.
Kapaun, Gustav: *See*—
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,134,887, Cl. 260-205.000.
Kaplan, Reuben W.: *See*—
Stavenau, Harold L.; and Kaplan, Reuben W., 4,134,474, Cl. 182-187.000.
Kapron, Felix P.; and King, Frederick D., to Northern Telecom Limited. Optical fibre with increased security. 4,134,642, Cl. 350-96.330.
Karas, Nicholas V.: *See*—
Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., 4,135,185, Cl. 340-552.000.
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, to BASF Aktiengesellschaft. Process for preparing polymers in powder form. 4,135,043, Cl. 526-63.000.
Kastilahn, William W.; Garrett, Robert R.; and Park, Vernon L., to Alco Standard Corporation. Heating assembly for a heat treating furnace. 4,135,053, Cl. 13-25.000.
Kastner, Hans-Jurgen, to Bopp & Reuther GmbH. Flow meter. 4,134,296, Cl. 73-194.0VS.
Kaufman, Harold C.: *See*—
Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.
Kaulen, Hans: *See*—
Dyllus, Frank-Ulrich; Kaulen, Hans; and Schmidt, Manfred, 4,134,559, Cl. 242-78.100.
Kawahara, Yasuhito: *See*—
Ishizaka, Sunao; and Kawahara, Yasuhito, 4,134,661, Cl. 354-289.000.
Kawai, Yukio; and Adachi, Masaharu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Koyo Seiko Kabushiki Kaisha. Oil seal apparatus. 4,134,596, Cl. 277-152.000.
Kawakami, Katsuhiko: *See*—
Yamaguchi, Kineo; and Kawakami, Katsuhiko, 4,135,013, Cl. 427-405.000.
Kawamura, Masaharu: *See*—
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,134,654, Cl. 354-60.00R.
Kawasaki Seitetsu K.K.: *See*—
Ohmori, Hisashi; Ohnishi, Masayuki; and Yamamoto, Joshiji, 4,134,441, Cl. 164-4.000.
Kawawa, Takaho; Sato, Hideki; and Miyahara, Shinobu, to Nippon Kokan Kabushiki Kaisha. Method of continuously casting steel. 4,134,440, Cl. 164-4.000.
Kawazoe, Michio. Coupling device in a stroboscope holder with a removable bracket. 4,134,662, Cl. 354-293.000.
Kayano, Hideo: *See*—
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; and Kayano, Hideo, 4,134,759, Cl. 75-204.000.
Kayfetz, Paul D.; McHugh, Joseph; and Dugan, James, to CMA, Inc. Oil-burning illuminating device. 4,134,718, Cl. 431-125.000.
Kazuo, Nishiyama, to Sun Royal Co., Ltd. Composite padding material. 4,134,167, Cl. 5-361.00R.
Kehl, Albin; Muller, Hans-Georg; and Scharf, Friedrich, to Robert Bosch GmbH. System and method for determining vehicle ground speed. 4,135,155, Cl. 324-178.000.
Keller, John H.: *See*—
Forneris, John L.; Hicks, William W.; Keller, John H.; McKenna, Charles M.; and Seirmarco, James A., 4,135,097, Cl. 250-492.00B.
Kelley, Fred W., Jr., to General Electric Company. Apparatus for sensing the reactive or real components of current. 4,135,128, Cl. 323-124.000.
Kelley, John R.; and Wyse, Harold G. Thermal protective switch. 4,135,177, Cl. 337-407.000.
Kelly, Ray G.: *See*—
Muhler, Joseph C.; Kleber, Carl J.; and Kelly, Ray G., 4,134,999, Cl. 426-3.000.
Kemmner, Ulrich; Ruhl, Karl; and Schillinger, Rainer, to Robert Bosch GmbH. Fuel supply unit consisting of a pump and an electromotor. 4,134,712, Cl. 417-423.00R.
Kemplin, Richard M.; Tverdoch, Richard N.; and Hennessee, Larry W., to Hewlett-Packard Company. Plotter with automatic penchanger. 4,135,245, Cl. 364-520.000.
Kempter, Fritz E.; Hartmann, Heinrich; and Gulbins, Erich, to BASF Aktiengesellschaft. Surface-coating binders for cathodic electrocoating. 4,134,932, Cl. 260-831.000.
Kennepohl, Gerhard J. A.; Miller, Laverne J.; and Bean, David C., to Gulf Canada Limited. Built-up roofing using sulfur asphalt. 4,135,022, Cl. 428-143.000.
Keppeler, Dieter: *See*—
Hillenbrandt, Siegfried; and Keppeler, Dieter, 4,134,223, Cl. 42-84.000.
Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See*—
Seeger, Arnold; and Schalt, Wilfried, 4,135,118, Cl. 318-85.000.
Kersker, Theodore M.: *See*—
Rye, Grover W.; Scarpitti, Anthony J.; and Kersker, Theodore M., 4,134,726, Cl. 8-139.100.
Kersten, Ralf: *See*—
Auracher, Franz; and Kersten, Ralf, 4,134,640, Cl. 350-96.150.
Kersten, Reinhard; and Kuhl, Egbert, to U.S. Philips Corporation. Solar collector comprising a U-shaped absorber. 4,134,388, Cl. 126-270.000.
Kersten, Reinhard: *See*—
Mahdjuri, Faramarz; Horster, Horst; and Kersten, Reinhard, 4,134,391, Cl. 126-271.000.
Kesten, Stephen J.: *See*—
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,896, Cl. 260-332.20A.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,897, Cl. 260-332.100.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,900, Cl. 260-332.20A.
Key Chemicals, Inc.: *See*—
Carstens, Ronald A.; and Butcher, William J., 4,134,781, Cl. 156-64.000.
Khanna, Shyam M.: *See*—
United States of America, National Aeronautics and Space Administration; Khanna, Shyam M.; and Urban, Eugene W., 4,135,127, Cl. 323-44.00F.
Kibler, Roland G.; and Hartfelder, Bruce C., to General Motors Corporation. Engine speed limiting control circuit. 4,134,373, Cl. 123-102.000.
Kiefer, Hans: *See*—
Hohenschutz, Heinz; Strohmeyer, Max; Herr, Manfred; and Kiefer, Hans, 4,134,915, Cl. 260-561.00R.
Kielmeyer, William H.: *See*—
Musz, Andrew; Hoehler, John A.; Hilt, Susan F.; and Kielmeyer, William H., 4,134,242, Cl. 52-309.100.
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, to Konishiroku Photo Industry Co., Ltd. Dye image forming process. 4,134,766, Cl. 96-55.000.
Kikuchi, Shuichi, to Medica Co., Ltd. Film developing device. 4,134,666, Cl. 354-313.000.
Kilbane, James C.: *See*—
Hamill, Samuel M., III; and Kilbane, James C., 4,135,238, Cl. 364-107.000.
Hamill, Samuel M., III; Kilbane, James C.; and Zamkow, Stanley F., 4,135,239, Cl. 364-107.000.
Kim, Dae K.: *See*—
Bertolacini, Ralph J.; and Kim, Dae K., 4,134,823, Cl. 208-65.000.
Kim, Dong W.; and Aberle, Leonard J., to Allied Chemical Corporation. Method and apparatus to blow yarn and plug from high temperature yarn texturing jet device when yarn flow stops. 4,134,191, Cl. 28-248.000.
Kim, Jinchoon, to United States of America, Energy. Use of predissociation to enhance the atomic hydrogen ion fraction in ion sources. 4,135,093, Cl. 250-423.00R.
Kim, Kee W., to Daniel Valve Company. Liquid meter prover apparatus. 4,134,288, Cl. 73-3.000.
Kimura, Choichi: *See*—
Sakai, Tetsuo; Shiraishi, Shigezo; Kimura, Choichi; Nakajimi, Maki; and Sato, Hitoshi, 4,134,342, Cl. 104-12.000.
Kimura, Hitoshi: *See*—
Takahama, Hisataka; and Kimura, Hitoshi, 4,134,465, Cl. 177-16.000.
Kimura, Katsuhiko. Sprinkler head. 4,134,458, Cl. 169-37.000.
King, Frederick D.: *See*—
Kapron, Felix P.; and King, Frederick D., 4,134,642, Cl. 350-96.330.
King, James R. Portable running ropes with flat spring cross members. 4,134,586, Cl. 273-55.00R.
King Radio Corporation: *See*—
Borota, Milan, Jr., 4,135,187, Cl. 343-6.8LC.
Kingelin, George F., to Gulf Research & Development Company. Well testing tool. 4,134,452, Cl. 166-133.000.
Kingsley, Charles A., to General Motors Corporation. Balance tube fuel bowl vent system. 4,134,378, Cl. 123-136.000.
Kirk, David L.: *See*—
Elmasian, Edward, 4,135,144, Cl. 340-32.000.
Kirsanoff, Boris J.: *See*—
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Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, to Bayer Aktiengesellschaft. O-Alkyl-S-n-propyl-N-sulfonyl-phosphoric acid ester amides. 4,134,979, Cl. 424-215.000.
Kita, Hisanao: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.

Kitamoto, Tatsuji: *See*—
Nakamura, Matsuaki; Kitamoto, Tatsuji; Tamai, Yasuo; and Kurokawa, Koshu, 4,135,218, Cl. 360-127.000.

Kiyohara, Takehiko; Okuno, Youichi; Tunekawa, Tokuichi; and Hashimoto, Teiji, to Canon Kabushiki Kaisha. Light measuring arrangement for a single lens reflex camera. 4,134,652, Cl. 354-23.00R.

Klar, Erhard: *See*—
Samal, Prasanna K.; and Klar, Erhard, 4,134,800, Cl. 204-10.000.

Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Sodium percarbonate particles (B). 4,135,010, Cl. 427-215.000.

Kleber, Carl J.: *See*—
Muhler, Joseph C.; Kleber, Carl J.; and Kelly, Ray G., 4,134,999, Cl. 426-3.000.

Klein, Richard M.; Nelson, William F.; Pappalardo, Romano G.; and Riseberg, Leslie A., to GTE Laboratories Incorporated. Aluminophosphate luminescent glass. 4,134,851, Cl. 252-301.40P.

Kleinatland, Joseph W.; and Lucore, Dale J. Electrical outlet and under plate assembly. 4,134,636, Cl. 339-122.00R.

Klemm, Gunter, to Firm. Ing. Gunter Klemm. Hydraulic drilling device. 4,134,460, Cl. 173-163.000.

Kleuters, Wilhelm J.; van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., to U.S. Philips Corporation. Objective mount for video disc player. 4,135,206, Cl. 358-128.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See*—
Bender, Hans; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,134,829, Cl. 209-223.00R.

Kloren, Ulrich: *See*—
Schafer, Horst-Dieter; Loosen, Paul; Kloren, Ulrich; and Thiele, Hans-Martin, 4,134,699, Cl. 403-13.000.

Kluy, Werner: *See*—
Feichtinger, Hans; Lutze, Siegfried; Birnkraut, Hans-Walter; and Kluy, Werner, 4,134,933, Cl. 260-848.000.

Knabe, Frank: *See*—
Heckel, Claus; Wimmer, Dieter; and Knabe, Frank, 4,135,060, Cl. 179-15.0BY.

Kniat, John: *See*—
Gardner, William B.; and Kniat, John, 4,134,259, Cl. 60-241.000.

Knight, Onis A., Jr., to Container Corporation of America. Tray with interlocking end flanges. 4,134,532, Cl. 229-32.000.

Knippschild, Gerd: *See*—
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,135,010, Cl. 427-215.000.

Knitsch, Karl-Wolfgang; Hagen, Alexander; Munz, Eberhard; and Determann, Helmut, to Boehringer Mannheim GmbH. Production of porous tablets. 4,134,943, Cl. 264-28.000.

Knoebel, Daniel S.: *See*—
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Knogo Corporation: *See*—
Pruzick, Ronald, 4,135,184, Cl. 340-572.000.

Knox, Benjamin H.: *See*—
Frankfort, Hans, R. E.; and Knox, Benjamin H., 4,134,882, Cl. 528-309.000.

Kobayashi, Mitsuo, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Device for indicating switch operation by variable illuminating light. 4,135,073, Cl. 200-315.000.

Kobe Steel, Ltd.: *See*—
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.

Kobinger, Walter: *See*—
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.

Koch, Harald: *See*—
Volker, Herbert M.; Oser, Polat; Doring, Gerhard; and Koch, Harald, 4,134,733, Cl. 422-177.000.

Kochs Adler AG: *See*—
Scholl, Hans; and Bernewasser, Horst, 4,134,210, Cl. 33-23.00H.

Kocsis, Oliver: *See*—
Dancso, Laszlo; Kocsis, Oliver; Horvath, Jeno; and Banszki, Miklos, 4,134,350, Cl. 112-110.000.

Koide, Kazuyoshi: *See*—
Otaki, Yukio; Oka, Ken-ichiro; Koide, Kazuyoshi; and Nakagawa, Kiyoshi, 4,134,252, Cl. 57-284.000.

Koizumi, Ken-ichi: *See*—
Koseki, Shyushi; and Koizumi, Ken-ichi, 4,134,375, Cl. 123-119.0EC.

Kokubo, Humihiro: *See*—
Matsumoto, Noboru; Nakashima, Mikio; Kokubo, Humihiro; Nakamura, Yukio; and Adachi, Yoshiaki, 4,134,263, Cl. 60-293.000.

Kollmeyer, Willy D.: *See*—
Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., 4,134,752, Cl. 71-103.000.

Komaita, Toshiki: *See*—
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, 4,134,766, Cl. 96-55.000.

Komatsu, Junzo: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.

Komatsu, Kyoji: *See*—
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.

Komatsu, Yasuji: *See*—
Takiyama, Eiichiro; Komatsu, Yasuji; and Danbara, Hiroshi, 4,134,884, Cl. 260-861.000.

Kommrusch, Richard S., to Motorola, Inc. Directional duplexer. 4,135,193, Cl. 343-854.000.

Komura, Tsuneo: *See*—
Oosake, Shigenori; Murakoshi, Makoto; and Komura, Tsuneo, 4,134,675, Cl. 355-54.000.

Kondo, Kazuo: *See*—
Takami, Akio; Kondo, Kazuo; and Tanaka, Kazutoshi, 4,135,038, Cl. 428-427.000.

Kondo, Masahiro: *See*—
Harada, Yoshiaki; Okamura, Kazuo; and Kondo, Masahiro, 4,135,100, Cl. 250-573.000.

Kondo, Mitsuo: *See*—
Inoue, Shigeo; and Kondo, Mitsuo, 4,134,971, Cl. 424-128.000.

Kondo, Takashi: *See*—
Suzuki, Takeshi; Hirata, Hiroshi; and Kondo, Takashi, 4,134,649, Cl. 352-27.000.

Konig, Joachim: *See*—
Quiring, Bernd; Wagner, Kuno; and Konig, Joachim, 4,134,935, Cl. 260-859.00R.

Konishi, James T.: *See*—
Parkinson, David B.; and Konishi, James T., 4,134,192, Cl. 29-2.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Harada, Yoshiaki; Okamura, Kazuo; and Kondo, Masahiro, 4,135,100, Cl. 250-573.000.
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, 4,134,766, Cl. 96-55.000.
Sakazume, Kaiichiro; Fujimori, Noboru; Sakamoto, Eiichi; and Ishikawa, Hidehiko, 4,134,767, Cl. 96-60.00R.

Konrad, Eugen: *See*—
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,134,412, Cl. 132-7.000.

Koppers Company, Inc.: *See*—
Weickenmeier, Kurt K., 4,134,330, Cl. 93-93.00M.

Kordes, Myron G., to Hobart Corporation. Insulated door and method of construction. 4,134,626, Cl. 312-214.000.

Korenev, Vsevolod T.: *See*—
Genrikh, Georgy A.; Nikonets, Leonid A.; Dostman, Lev S.; and Korenev, Vsevolod T., 4,135,221, Cl. 361-1.000.

Koseki, Shyushi; and Koizumi, Ken-ichi, to Nissan Motor Company, Limited. Method of and system for controlling fuel/air ratio in an internal combustion engine. 4,134,375, Cl. 123-119.0EC.

Kosel, Helmut, to Siemens Aktiengesellschaft. Phase regulating circuit for controlling spaced pulse sequences. 4,135,163, Cl. 331-1.00A.

Koski, Jerry V., to Parker-Hannifin Corporation. Member for welding to another member. 4,134,607, Cl. 285-173.000.

Kossack, Charles A., to Atlantic Richfield Company. Restoration of a leached underground reservoir. 4,134,618, Cl. 299-5.000.

Kourimsky, Friedrich J. A., to AMP Incorporated. Automatic junction unit. 4,135,226, Cl. 361-415.000.

Kourtides, Demetrius A.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Low density bismaleimide-carbon microballoon composites. 4,135,019, Cl. 428-117.000.

Kowa Chemical Industry Ltd.: *See*—
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, 4,134,956, Cl. 264-256.000.

Koyama, Mitsuo: *See*—
Nemoto, Ichiro; Nakagawa, Tadashi; and Koyama, Mitsuo, 4,134,659, Cl. 354-267.000.

Koyo Seiko Kabushiki Kaisha: *See*—
Kawai, Yukio; and Adachi, Masaharu, 4,134,596, Cl. 277-152.000.

Kozdon, Friedrich: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.

Kozima, Akio: *See*—
Okazaki, Mitsuo; Yamaguchi, Akihiro; Kozima, Akio; and Sasaki, Masaomi, 4,134,761, Cl. 96-1.50R.

Kramer, Ralph J.: *See*—
Houser, John E.; and Kramer, Ralph J., 4,134,749, Cl. 71-9.000.

Kramer, Wolfgang; Buchel, Karl H.; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 2-Acyloxy-1-phenoxy-1-imidazolyl-(1)-3,3-dimethyl-butanes. 4,134,988, Cl. 424-273.00R.

Krause, Werner A.; and Johnston, Frank C., to General Electric Company. Electrical busway apparatus. 4,134,633, Cl. 339-22.00B.

Krautz, Kurt, to Stakupress Gesellschaft fur Stahl-und Kunststoffverarbeitung mbH & Co., KG. Safety belt fastening. 4,134,186, Cl. 24-230.00A.

Kreisel, Rudolf, to Schering AG. Arrangement for controlling the electric energy supply to an electroplating installation. 4,134,819, Cl. 204-228.000.

Krolak, Ronald L.; Duke, James T.; and Ritter, Arthur J., to Caterpillar Tractor Co. Scraping apparatus for track-type vehicles. 4,134,622, Cl. 305-12.000.

Kruger, Gunter; Kuttner, Klaus; Widmaier, Manfred; and Leinauer, Erich, to Robert Bosch GmbH. Method of trimming electronic

components having an integrated circuit to design specification. 4,134,808, Cl. 204-129.200.

Kruger, Gunther, to Steele Chemicals Co. Ltd. 14-Functionalized 8,19-oxido steroids and processes for preparation thereof. 4,134,891, Cl. 260-239.55R.

Krupp, Gerald L., to Blameuser, Flora. Portable handclap generator. 4,135,146, Cl. 340-384.00E.

Kubanoff, Jacob H., to United States of America, Army. Apparatus for suppressing a strong electrical signal. 4,135,159, Cl. 325-476.000.

Kubota, Ltd.: *See—*
Iwahashi, Toshio; Nakai, Kouji; and Tani, Yoshio, 4,134,370, Cl. 123-41.310.
Matsubara, Yoshitaka, 4,134,617, Cl. 297-345.000.
Takahama, Hisataka; and Kimura, Hitoshi, 4,134,465, Cl. 177-16.000.
Watanabe, Makoto, 4,134,505, Cl. 214-138.00F.

Kubota, Takao, to G-C Dental Industrial Corp. Resinous materials for restoring crowns. 4,134,930, Cl. 260-875.000.

Kubota, Toshifumi: *See—*
Sugiyama, Takahiro; Kubota, Toshifumi; and Adachi, Rensuke, 4,134,645, Cl. 350-216.000.

Kuda, Vladimir: *See—*
Malasek, Jaromir; Kuda, Vladimir; and Pozar, Vojmir, 4,134,434, Cl. 139-429.000.

Kudamatsu, Akio: *See—*
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,134,979, Cl. 424-215.000.

Kuesters, Werner; Osterloh, Rolf; and Jacobi, Manfred, to BASF Aktiengesellschaft. Photopolymerizable composition and its use. 4,134,813, Cl. 204-159.240.

Kufner Textilwerke KG: *See—*
Backes, Herbert, 4,135,025, Cl. 428-195.000.

Kuhl, Egbert: *See—*
Kersten, Reinhard; and Kuhl, Egbert, 4,134,388, Cl. 126-270.000.

Kuhl, Henry Y. Process for drying hydrophobic articles. 4,134,215, Cl. 34-8.000.

Kuiff, Siegfried; and Ueberwolf, Heinz, to Saint-Gobain Industries. Electrically heated window. 4,135,078, Cl. 219-203.000.

Kuntz, Donald A.: *See—*
Atkinson, David W.; Kuntz, Donald A.; and Sprick, William L., 4,134,561, Cl. 248-632.000.

Kup Kap, Inc.: *See—*
Freeman, Warren R., 4,134,248, Cl. 53-298.000.

Kupperman, Dennis: *See—*
Kupperman, Sam; and Kupperman, Dennis, 4,134,227, Cl. 46-86.00R.

Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development. Parachute kit. 4,134,227, Cl. 46-86.00R.

Kuraray Co., Ltd.: *See—*
Yamashita, Shuzo; Nagata, Shiro; and Takakura, Koichi, 4,134,837, Cl. 210-500.00M.

Kurata, Hirotaka, to Sansui Electric Co., Ltd. Synchronous generating circuit devices with two phase-locked loops and feedback around both. 4,135,164, Cl. 331-2.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Yoshikawa, Shinsuke; Sawa, Yuji; and Endo, Sigeru, 4,134,952, Cl. 264-173.000.

Kurland, Jeffrey B.; and Miller, Albert W., to Alden Research Foundation. Stiffening construction for facsimile cassette. 4,135,199, Cl. 346-165.000.

Kuroda, Takio: *See—*
Oda, Shin-ichi; Okamoto, Tosaku; Nakanishi, Akira; and Kuroda, Takio, 4,134,847, Cl. 252-62.10P.

Kurokawa, Koshu: *See—*
Nakamura, Matsuaki; Kitamoto, Tatsuji; Tamai, Yasuo; and Kurokawa, Koshu, 4,135,218, Cl. 360-127.000.

Kurosu, Tomio: *See—*
Ishiguro, Yasuo; and Kurosu, Tomio, 4,134,653, Cl. 354-42.000.

Kurscheid, Gerd. Apparatus for forming fans. 4,134,567, Cl. 249-83.000.

Kurtz, Abraham N.; Thorsteinson, Erlind M.; and Decker, Harry J., to Union Carbide Corporation. Oxidation catalyst for preparing unsaturated acids and aldehydes. 4,134,859, Cl. 252-456.000.

Kusebauch, Walter: *See—*
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.

Kushmuk, Walter P., to Continental Scale Corporation. Height measuring device. 4,134,213, Cl. 33-169.00R.

Kuskowski, Walter T., to Canadian General Electric Company, Ltd. Foam in place breaker strips. 4,134,627, Cl. 312-214.000.

Kustom Fit Manufacturing Co.: *See—*
Rush, Kim E., 4,134,362, Cl. 118-211.000.

Kuttner, Klaus: *See—*
Kruger, Gunter; Kuttner, Klaus; Widmaier, Manfred; and Leinauer, Erich, 4,134,808, Cl. 204-129.200.

Kvita, Vratislav: *See—*
Roth, Martin; Kvita, Vratislav; and Greber, Gerd, 4,134,895, Cl. 260-326.410.

Kyowa Hakko Kogyo Co., Ltd.: *See—*
Terada, Osamu; and Uwajima, Takayuki, 4,134,793, Cl. 195-103.50R.

L. E. Mason Co.: *See—*
Sullo, Kenneth J., 4,134,516, Cl. 220-242.000.

La Societe Metalimphy: *See—*
Lagarde, Pierre; and Elie, Andre, 4,134,538, Cl. 235-449.000.

Laar, Erwin; and Ganser, Friedrich, to AGFA-Gevaert AG. Method and apparatus for feeding replenishment chemicals in film processors. 4,134,663, Cl. 354-298.000.

Labavia S.G.E.: *See—*
Jollois, Jean-Marie, 4,135,106, Cl. 310-105.000.
Sertori, Jean-Claude, 4,134,266, Cl. 60-562.000.

Labaz: *See—*
Pigerol, Charles; de Cointet de Fillain, Paul; Bazile, Yves; Chignac, Michel; and Grain, Claude, 4,134,909, Cl. 260-456.00P.

Laboratorios Cosmos S.A.: *See—*
Marquez, Victor E., 4,135,048, Cl. 548-369.000.

LaChance, Ernest J., Sr.: *See—*
Jean, Leonard P.; and LaChance, Ernest J., Sr., 4,134,574, Cl. 254-134.30R.

Ladisic, Jeffrey M.: *See—*
Ross, Steven G.; and Ladisic, Jeffrey M., 4,134,279, Cl. 70-18.000.

Lagana', Vincenzo: *See—*
Zardi, Umberto; and Lagana', Vincenzo, 4,134,939, Cl. 261-112.000.

Lagarde, Pierre; and Elie, Andre, to La Societe Metalimphy. Process and apparatus for identification of objects. 4,134,538, Cl. 235-449.000.

Lagendijk, Andre: *See—*
Schumacher, John C.; and Lagendijk, Andre, 4,134,514, Cl. 220-85.00S.

Lagher, Gunnar H., to Andersson, Maj Agnes. Bimetallic element. 4,134,540, Cl. 236-34.500.

La Haye, Paul G.; and Bjerklie, John W., to Hague International. Bellows sealing arrangement. 4,134,449, Cl. 165-83.000.

Laitar, Robert, to CPC International Inc. Furan-phenolic resins for collapsible foundry molds. 4,134,442, Cl. 164-43.000.

Lakerveld, Herman G.: *See—*
Kamerbeek, Evert M. H.; and Lakerveld, Herman G., 4,135,107, Cl. 310-179.000.

Lallement, Serge; and Martineau, Philippe, to Regie Nationale des Usines Renault. Safety device for closing a pipeline, especially for the gasoline tank of automotive vehicles. 4,134,416, Cl. 137-38.000.

Lambert, Robert W.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,134,972, Cl. 424-177.000.

Lampard, Robert D. Container for storage of articles and device for utilization of solid carbon dioxide. 4,134,276, Cl. 62-383.000.

Landauer, Frederick P., Jr.: *See—*
Goetz, Alexander F. H.; and Landauer, Frederick P., Jr., 4,134,683, Cl. 356-407.000.

Langeluddeke, Peter: *See—*
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,134,753, Cl. 71-108.000.

Langer, Arthur W., Jr., to Exxon Research & Engineering Co. Process for polymer lithiation in graft polymerization. 4,134,938, Cl. 260-877.000.

Lansinger, Jere R., to Chrysler Corporation. Fluid coupling. 4,134,484, Cl. 192-58.00B.

Lanza, Richard C.; and Sohval, A. Robert, to Butler-Newton, Inc. Diagnostic x-ray imaging system. 4,135,091, Cl. 250-336.000.

Lark Luggage Corporation: *See—*
Pelavin, Joseph Y., 4,134,280, Cl. 70-55.000.

Larsen, Lawrence E.; and Jacobi, John H., to United States of America, Army. Microwave time delay spectroscopic methods and apparatus for remote interrogation of biological targets. 4,135,131, Cl. 324-58.50A.

Larsen, Tor G.: *See—*
Typpo, Pekka M.; Wennerberg, Gunnar; and Larsen, Tor G., 4,134,211, Cl. 33-147.00L.

Larson, Ernst R., to K. E. Levin Maskin AB. Thermoplastic frame for silk-screen. 4,134,340, Cl. 101-127.100.

Latsch, Reinhard; Bianchi, Valerio; and Zeller, Hans, to Robert Bosch GmbH. Method and apparatus for detecting cylinder malfunction in internal combustion engines. 4,134,374, Cl. 123-117.00D.

Laudel, Arthur, Jr.: *See—*
Young, Glenn S.; and Laudel, Arthur, Jr., 4,135,101, Cl. 307-39.000.

Laufer, Helmut, to Steidinger, Dual Gebruder. Switching arrangement for a tape recorder. 4,135,216, Cl. 360-74.000.

Laure, George R., to Laure Prosthetics, Inc. Insertion tools. 4,134,157, Cl. 3-1.910.

Laure, George R., to Laure Prosthetics, Inc. Knee joint prosthesis. 4,134,158, Cl. 3-1.911.

Laure Prosthetics, Inc.: *See—*
Laure, George R., 4,134,157, Cl. 3-1.910.
Laure, George R., 4,134,158, Cl. 3-1.911.

Lauria, Francesco: *See—*
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, 4,134,974, Cl. 424-248.540.

Lavigna, Robert J.; Pearce, Charles W.; and Reusser, Raymond E., to Western Electric Company, Inc. Real-time analysis and control of melt-chemistry in crystal growing operations. 4,134,785, Cl. 156-601.000.

Lawton, William R. Heat-activated adhesive coating. 4,135,033, Cl. 428-344.000.

Lazzari, Armando; Cartoceti, Alfredo; and Steinort, Eberhart, to I.O.S. Industria Ossidi Sinterizzati S.r.l. Device for propelling grinding bodies in a grinding mill. 4,134,557, Cl. 241-170.000.

Lazzari, Armando: *See—*
Steinort, Eberhart; Lazzari, Armando; and Cartoceti, Alfredo, 4,134,553, Cl. 241-34.000.

Leang, William N. C.: *See—*
Zolnerovich, Walter, Jr.; and Leang, William N. C., 4,134,476, Cl. 187-29.00R.

Leathem, Bruce M.; and Leathem, George E., to Liftco Industries, Inc. Casket lifting device. 4,134,190, Cl. 27-27.000.
Leathem, George E.: *See*—
Leathem, Bruce M.; and Leathem, George E., 4,134,190, Cl. 27-27.000.
Lebedev, Evgeny I.: *See*—
Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., 4,134,482, Cl. 192-91.00R.
Ledex, Inc.: *See*—
Quigley, Larry L., 4,135,150, Cl. 340-167.00R.
Lee, Do I., to Dow Chemical Company, The. Heterogeneous polymer particles comprising an interpolymer domain of a monovinylidene aromatic monomer, an open chain aliphatic conjugated diene and a monoethylenically unsaturated acid. 4,134,872, Cl. 260-29.7UP.
Lee, Nelly W. Foldable road reflector device. 4,134,643, Cl. 350-97.000.
Leeder, Geoffrey M. A., to Hoffmann-La Roche Inc. Isomerization process. 4,134,922, Cl. 260-606.50F.
Leeds & Northrup Company: *See*—
Wertheimer, Alan L., 4,134,679, Cl. 356-336.000.
Lefebvre, Arthur H.; Reider, Samuel B.; and Tomlinson, Jerry G., to General Motors Corporation. Afterburner flow mixing means in turbofan jet engine. 4,134,260, Cl. 60-261.000.
Legendre, Jacques: *See*—
Baril, Michel; and Legendre, Jacques, 4,135,170, Cl. 333-26.000.
Lehman, James A., to Warner-Lehman Corporation. Illuminated flying saucer toy. 4,134,229, Cl. 46-228.000.
Lehmann, Hans: *See*—
Heese, Dieter; Hausberg, Gerhard; Lehmann, Hans; Schmidt, Hans-Joachim; Goldschmidt, Klaus; and Than, Kyaw, 4,134,774, Cl. 106-97.000.
Le Huede, Georges; and Zacharie, Guy, to Electricite de France. Method for mechanical removal of tensile stresses in a tube which has been expanded in a support. 4,134,287, Cl. 72-370.000.
Leinauer, Erich: *See*—
Kruger, Gunter; Kuttner, Klaus; Widmaier, Manfred; and Leinauer, Erich, 4,134,808, Cl. 204-129.200.
Leisegang, Fritz. Colposcope with photographic attachment. 4,134,637, Cl. 350-19.000.
LeMert, Alfred J., to Ludwig Industries. Sound projector for musical drums. 4,134,324, Cl. 84-411.00R.
Lentz, William P.: *See*—
Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, 4,135,018, Cl. 428-116.000.
Lenzin, Fritz; and Schubert, Joachim, to Von Arx AG Maschinenfabrik. Surface-cleansing tool. 4,134,193, Cl. 29-81.00L.
Leo, Angelo F.: *See*—
Diaz, Francis A.; and Leo, Angelo F., 4,134,873, Cl. 260-37.00N.
Leonard, William H., to Xerox Corporation. Intersecting optical and copy sheet path method and apparatus. 4,134,671, Cl. 355-8.000.
Lestan, Ivan: *See*—
Mirr, Gordon J., deceased; Lestan, Ivan; and Stevens, Myron T., 4,134,942, Cl. 264-26.000.
L'Etat Francais represente par le Delegue Ministeriel: *See*—
Besson, Raymond J., 4,135,108, Cl. 310-344.000.
Levene, Leon; and McClung, R. Wayne, to Domglas Inc. Method of strengthening glass articles. 4,134,746, Cl. 65-30.00E.
Lever Brothers Company: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,134,838, Cl. 252-8.800.
Stebles, Malcolm R. D., 4,134,968, Cl. 424-47.000.
van den Ouweland, Godefridus A. M.; and Peer, Henricus G., 4,134,901, Cl. 260-332.30R.
Levine, Richard G.: *See*—
Hanrahan, James R., Jr.; and Levine, Richard G., 4,134,955, Cl. 264-244.000.
Lewchuk, Richard R.: *See*—
Bologna, John P.; and Lewchuk, Richard R., 4,134,240, Cl. 52-202.000.
Libutti, Bruce L.; and Oschell, Francis J., to Betz Laboratories, Inc. N-aminoethyl ethanolamine as a cold-end additive. 4,134,728, Cl. 422-9.000.
Libutti, Bruce L.; and Oschell, Francis J., to Betz Laboratories, Inc. Aqueous solution of sodium aluminate and N-aminoethyl ethanolamine as a cold end additive. 4,134,729, Cl. 422-9.000.
Libutti, Bruce L.: *See*—
Oschell, Francis J.; and Libutti, Bruce L., 4,134,727, Cl. 422-9.000.
Lichtenstein, Nachum, to Northern Telecom Limited. Impedance compensation of transmission line. 4,135,064, Cl. 179-170.00G.
Lickei, Donald L.; and Maxwell, Clifford J., to Olin Corporation. Reduction of scorching in polyurethane foam. 4,135,042, Cl. 521-107.000.
Liebermann, Benno E. Spray cooking of food articles. 4,134,998, Cl. 426-438.000.
Lienenluke, Paul: *See*—
Guhne, Wieland; and Lienenluke, Paul, 4,134,605, Cl. 285-7.000.
Liftco Industries, Inc.: *See*—
Leathem, Bruce M.; and Leathem, George E., 4,134,190, Cl. 27-27.000.
Liguori, Alfred T., to Modern Mold & Tool Corp. Method for producing ball point pen nibs. 4,134,199, Cl. 29-441.0BP.
Lillibridge, Harold R., to Champion International Corporation. Use of microencapsulated glue in the manufacture of envelopes. 4,134,322, Cl. 93-61.00R.
Lillie, Christian: *See*—
Eberlein, Wolfgang; Austel, Volkhard; Heider, Joachim; Dammgen, Jurgen; Kadatz, Rudolf; Lillie, Christian; and Kobinger, Walter, 4,134,980, Cl. 424-250.000.
Limper, Nicolaas H.; and Lohuis, Willem J., to U.S. Philips Corporation. Television camera tube with centering means. 4,135,210, Cl. 358-217.000.
Lindberg, Fritz J.; and Nilsson, Uno S., to Telefonaktiebolaget L M Ericsson. Attaching means for circuit card connectors. 4,134,632, Cl. 339-17.0LC.
Linde Aktiengesellschaft: *See*—
Stuhr, Hans W., 4,135,121, Cl. 318-358.000.
Lindewall, Frank W., to Berol Kemi AB. Process for the preparation of semi-rigid polyurethane foam having exceptional shock-absorbing properties and vehicle bumpers thereof. 4,134,610, Cl. 293-71.00R.
Lindstrom, Harold R., to Deere & Company. Mixer blade for a mixer tank. 4,134,690, Cl. 366-266.000.
Ling, Bernt; Persson, Anders; and Soderstrom, Sven-Erik, to ASEA Aktiebolag. Cloud altitude measuring apparatus. 4,134,677, Cl. 356-5.000.
Lionetti, James G.: *See*—
Argentieri, Michael A.; and Lionetti, James G., 4,135,143, Cl. 340-27.00R.
Liquid Controls Corporation: *See*—
Contoyanis, Peter J., 4,134,175, Cl. 16-2.000.
Little, Mark J. Rotary valve engine apparatus. 4,134,381, Cl. 123-190.00E.
Litton Industrial Products Inc.: *See*—
Mann, Stanley L.; and Rettig, Charles E., 4,135,236, Cl. 363-124.000.
Livermore, Anthony W.; and Noren, Daniel W., to Spectrum Conversion, Inc. Solar energy collection. 4,134,392, Cl. 126-271.000.
Livick, Lester R. Safety carriage for supporting and guiding an acetylene torch. 4,134,576, Cl. 266-68.000.
Lloyd, Leslie: *See*—
Craven, William R.; and Lloyd, Leslie, 4,134,611, Cl. 296-137.00C.
Lloyd, Ronald; Patchell, Albert G.; Murphy, William O.; and Herbert, Peter J., to Smith & Nephew Plastics Ltd. Embossed film product and adhesive coated strip formed therefrom. 4,135,023, Cl. 428-167.000.
Lloyd, Ronald: *See*—
Dow, James; Lloyd, Ronald; and Patchell, Albert G., 4,134,951, Cl. 264-147.000.
Patchell, Albert G.; Murphy, William O.; and Lloyd, Ronald, 4,135,021, Cl. 428-134.000.
Lockard, Joseph L.: *See*—
Conrad, Jack S.; Granitz, Richard F.; and Lockard, Joseph L., 4,134,631, Cl. 339-17.00M.
Loftus, Michael E. Drum and pedal beater assembly. 4,134,325, Cl. 84-422.00R.
Logan, Clifford K., Jr. Convertible furniture structure. 4,134,613, Cl. 297-107.000.
Logan, Robert P., to GTE Sylvania Incorporated. Time-shared sample and hold circuit. 4,135,209, Cl. 358-139.000.
Loggers, Jan N. H., to Houdstermaatschappij Alex A. Logges B.V. Slide bearing. 4,134,194, Cl. 29-149.50R.
Lohuis, Willem J.: *See*—
Limper, Nicolaas H.; and Lohuis, Willem J., 4,135,210, Cl. 358-217.000.
Lones, Joe J. Underwater illumination device. 4,135,228, Cl. 362-18.000.
Long, John P.: *See*—
Cannon, Joseph G.; Long, John P.; and Diana, John N., 4,134,997, Cl. 424-330.000.
Loosen, Paul: *See*—
Schafer, Horst-Dieter; Loosen, Paul; Kloren, Ulrich; and Thiele, Hans-Martin, 4,134,699, Cl. 403-13.000.
Lorenz, Donald H.; Tu, Shu T.; and Wyman, Donald P., to GAF Corporation. Radiation curable coating composition comprising an acryl urethane oligomer, and an ultra-violet absorber. 4,135,007, Cl. 427-44.000.
Lorenz, Kurt; Dungs, Horst; and Speich, Peter, to Carl Still, Firma; and Rheinische Braunkohlenwerke Aktiengesellschaft. Method for producing non-abrasive coke forms from brown-coal briquets. 4,134,794, Cl. 201-27.000.
Love, Francis L. Separable paint brush and holder assembly. 4,134,171, Cl. 15-146.000.
Love, Robert G.; Shelton, Robert Q.; and McCalla, Joseph B., Jr., to Halliburton Company. Method and apparatus for perforating and slotting well flow conductors. 4,134,453, Cl. 166-298.000.
Lowery, Robert H.: *See*—
Park, Kisoon; and Lowery, Robert H., 4,134,841, Cl. 252-8.900.
LTG Lufttechnische GmbH: *See*—
Furstenberg, Joachim, 4,134,745, Cl. 55-303.000.
Lucas, Paul A. Coffee cup and container. 4,134,492, Cl. 206-217.000.
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Lucore, Dale J.: *See*—
Kleinatland, Joseph W.; and Lucore, Dale J., 4,134,636, Cl. 339-122.00R.
Ludwig Industries: *See*—
LeMert, Alfred J., 4,134,324, Cl. 84-411.00R.
Luksus, Edmund. Heating and air conditioning system. 4,134,448, Cl. 165-62.000.

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Barchas, Richard K.; Gelbein, Abraham P.; and Santore, William J., 4,134,910, Cl. 260-465.00H.
Tsao, Utah; and Zasloff, Howard B., 4,134,926, Cl. 260-682.000.

Luossavaara-Kiirunavaara AB: *See—*
Ilmoni, Pehr-Adrian; and Drugge, Roland, 4,134,944, Cl. 264-37.000.

Lurie, David. Process for the desulfurization of flue gases. 4,134,961, Cl. 423-242.000.

Lutze, Siegfried: *See—*
Feichtinger, Hans; Lutze, Siegfried; Birnkraut, Hans-Walter; and Kluy, Werner, 4,134,933, Cl. 260-848.000.

Luxon, Bruce A.: *See—*
McVey, John K.; Luxon, Bruce A.; and Sharp, Larry L., 4,135,176, Cl. 337-404.000.

Luzina, Max, to W. Hegenscheidt Gesellschaft mit beschraenkter Haftung. Method for truing railroad car wheels. 4,134,314, Cl. 82-1.00C.

Lvovsky Politekhnichesky Institut: *See—*
Genrikh, Georgy A.; Nikonets, Leonid A.; Dostman, Lev S.; and Korenev, Vsevolod T., 4,135,221, Cl. 361-1.000.

Lynch Corporation: *See—*
Hileman, Kenneth R., 4,134,748, Cl. 65-237.000.

Lynch, Thomas J.: *See—*
Goel, Rajeshwar P.; Vota, Terry L.; and Lynch, Thomas J., 4,134,317, Cl. 83-35.000.

Machleder, Warren H.; and Bollinger, Joseph M., to Rohm and Haas Company. Multipurpose hydrocarbon fuel and lubricating oil additive mixture. 4,134,846, Cl. 252-51.50A.

Machner, Peter, to Vereinigte Edelstahlwerke Aktiengesellschaft. Method of and apparatus for producing steel ingots. 4,134,443, Cl. 164-52.000.

Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., to Gas Developments Corporation. Desiccant apparatus and method. 4,134,743, Cl. 55-34.000.

Madden, Michael C.: *See—*
Adams, Calvin K.; Goldstein, Mark K.; Hall, Deborah C.; Hench, Larry L.; Madden, Michael C.; Pennypacker, Henry S., Jr.; and Stein, Gerald H., 4,134,218, Cl. 35-17.000.

Maeda, Koichi. Method for removing zinc type metals and compounds in dust recovery process in iron manufacture. 4,134,755, Cl. 75-25.000.

Maerfeld, Charles: *See—*
Tournois, Pierre; and Maerfeld, Charles, 4,134,623, Cl. 310-313.000.

Mager, Herbert: *See—*
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,134,412, Cl. 132-7.000.

Maharidge, Steve. One chuck grinding apparatus for end milling cutters and the like. 4,134,235, Cl. 51-92.0ND.

Mahdjuri, Faramarz; Horster, Horst; and Kersten, Reinhard, to U.S. Philips Corporation. Solar collector comprising an elongate Dewar vessel. 4,134,391, Cl. 126-271.000.

Maher, Galeb H., to Sprague Electric Company. Ceramic capacitor having a bismuth-containing silver-doped dielectric of $(Pb,La)(Zr,Ti)O_3$. 4,135,224, Cl. 361-321.000.

Mahurkar, Sakharam D. Double lumen hemodialysis catheter. 4,134,402, Cl. 128-214.00R.

Maier, Alfred E.; and Ricci, Louis N., to Westinghouse Electric Corp. Circuit breaker having opening spring position indicator. 4,135,072, Cl. 200-308.000.

Mailen, James C.: *See—*
Vondra, Benedict L.; Tallent, Othar K.; and Mailen, James C., 4,134,960, Cl. 423-7.000.

Makowski, Henry S.; and O'Farrell, Charles P., to Exxon Research & Engineering Co. Elastomeric blend compositions of a sulfonated elastomeric polymer. 4,134,870, Cl. 260-28.50B.

Makuuchi, Keizo: *See—*
Araki, Kunio; Makuuchi, Keizo; and Takagi, Tohru, 4,134,810, Cl. 204-159.150.

Malacheski, Joseph J., to Gutkowski, Donald, a part interest. Automatic keyboard operator. 4,135,074, Cl. 200-330.000.

Malasek, Jaromir; Kuda, Vladimir; and Pozar, Vojmir, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Weft cutting device in looms with mechanisms for multi weft weaving. 4,134,434, Cl. 139-429.000.

Mangood Corporation: *See—*
Czyryk, Chester S., 4,134,467, Cl. 177-133.000.
Johnson, Bernard A.; and Parkinson, Thomas M., 4,134,464, Cl. 177-3.000.

Manitoba Research Council: *See—*
Stuchly, Stanislaw S.; Tarnawecky, Michael Z.; and Yunik, Maurice, 4,135,152, Cl. 324-117.00R.

Mann, Leonard T., to Hart, Schaffner & Marx. Display fixture. 4,134,628, Cl. 312-239.000.

Mann, Stanley L.; and Rettig, Charles E., to Litton Industrial Products Inc. DC-to-DC chopper circuit. 4,135,236, Cl. 363-124.000.

Marchetti, Charles R., to GTE Sylvania Incorporated. Master timing generator. 4,135,166, Cl. 331-14.000.

Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., to Texaco Inc. Method for energy utilization in producing synthesis gas and recovering unconverted carbon. 4,134,740, Cl. 48-197.00R.

Markowitz, Jerome, to Allen Organ Company. Spatially separated tonal effects for an electronic musical instrument. 4,134,323, Cl. 84-1.270.

Marks, Alvin M.; and Marks, Mortimer. 3D Color pictures with multichrome filters. 4,134,644, Cl. 350-132.000.

Marks, Eugene J. Fertilizer and insecticide applicator. 4,134,349, Cl. 111-95.000.

Marks, Mortimer: *See—*
Marks, Alvin M.; and Marks, Mortimer, 4,134,644, Cl. 350-132.000.

Marquez, Victor E., to Laboratorios Cosmos S.A. Anaphylactic inhibiting trans-octahydronaphto[1,2-c:5,6-c'] dipyrazoles. 4,135,048, Cl. 548-369.000.

Marshall, Robert M., to Allied Chemical Corporation. Soil resistant spin finish for polyamide textile yarn. 4,134,839, Cl. 252-8.600.

Martin, Eugene C.: *See—*
Adicoff, Arnold; Martin, Eugene C.; and Yee, Rena Y., 4,134,848, Cl. 252-63.200.

Martin, John A.: *See—*
Boyer, Robert C.; Martin, John A.; Raseley, LeRoy J.; and Stoker, Robert J., 4,134,450, Cl. 165-111.000.

Martin, Paul W., to Dresser Industries, Inc. Method and apparatus for expanding tubes. 4,134,286, Cl. 72-122.000.

Martineau, Philippe: *See—*
Lallement, Serge; and Martineau, Philippe, 4,134,416, Cl. 137-38.000.

Martinez, David J.; and Schillinger, Joseph F., to Champion International Corporation. Self locking octagonal box. 4,134,531, Cl. 229-23.0BT.

Martinsson, John-Erik: *See—*
Asp, Borje; and Martinsson, John-Erik, 4,134,328, Cl. 89-1.817.

Martor-Argentax E. H. Beermann KG: *See—*
Beermann, Ewald H., 4,134,206, Cl. 30-294.000.

Marulic, Walter J.: *See—*
Gutridge, Jack E.; and Marulic, Walter J., 4,134,233, Cl. 49-411.000.

Marymac Industries, Inc.: *See—*
McManus, Joseph H., 4,134,409, Cl. 131-173.000.

Mascioli, Rocco L.: *See—*
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,134,994, Cl. 260-501.110.

Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, to Societa Farmaceutici Italia S.p.A. Anthracyclinc ethers and their preparation. 4,134,903, Cl. 260-365.000.

Massey-Ferguson Inc.: *See—*
Silaghi, Elmer W., 4,134,179, Cl. 16-128.100.

Massey, Randall R.: *See—*
Caldwell, Stephen A.; and Massey, Randall R., 4,135,141, Cl. 340-7.0PC.

Masson, Robert R.: *See—*
Sharland, Stanley G.; Mecca, Angelo R.; and Masson, Robert R., 4,134,162, Cl. 4-292.000.

Matay, Istvan M., to TRW, Inc. Pulser for ultrasonic inspection system. 4,134,302, Cl. 73-612.000.

Materials & Methods Limited: *See—*
Roberts, Maurice, 4,134,757, Cl. 75-130.00R.

Matschke, Arthur L., to Matschke General Research Company, Inc. Printing head. 4,134,691, Cl. 400-124.000.

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Matschke, Arthur L., 4,134,691, Cl. 400-124.000.

Matsubara, Yoshitaka, to Kubota, Ltd. Driver's seat mounting structure for a tractor. 4,134,617, Cl. 297-345.000.

Matsumoto, Noboru; Nakashima, Mikio; Kokubo, Humihiro; Nakamura, Yukio; and Adachi, Yoshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Air cleaner for use in an internal combustion engine. 4,134,263, Cl. 60-293.000.

Matsunaga, Masakazu, to F. M. Valve Manufacturing Co., Ltd. Automatic flushing system. 4,134,163, Cl. 4-302.000.

Matsuzaki, Atsushi: *See—*
Fujie, Masakatsu; Honma, Kazuo; and Matsuzaki, Atsushi, 4,134,444, Cl. 164-155.000.

Matsuzawa, Norio; Oi, Hidesaburo; Nishimura, Hiroshi; Wada, Shigeru; and Sasaki, Juntaro, to Mitsui Petrochemical Industries, Ltd. Process for polymerization of olefins and catalyst composition therefor. 4,135,045, Cl. 526-114.000.

Matthies, Bruce J.: *See—*
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,134,173, Cl. 15-210.00R.

Matula, Jouni: *See—*
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, 4,134,562, Cl. 639-.

Maurer, Ruprecht; and Timtner, Karlheinz, to Ringspann Albrecht Maurer K.G. Valve rotating device. 4,134,372, Cl. 123-90.280.

Maxwell, Clifford J.: *See—*
Lickei, Donald L.; and Maxwell, Clifford J., 4,135,042, Cl. 521-107.000.

Maxwell, Paul E., to Elevations/Design, Inc. Process for producing art works and resulting product. 4,135,020, Cl. 428-131.000.

Mayer, Robert, to Suntech, Inc. Flowrate control means. 4,134,423, Cl. 137-486.000.

McAdam, Raymond L.: *See—*
Bradley, Timothy G.; and McAdam, Raymond L., 4,134,857, Cl. 252-450.000.

McBain, Robert T.; and Johnson, Bruce C., to Columbia Steel Casting Co., Inc. Drag chain. 4,134,255, Cl. 59-78.000.

McCalla, Joseph B., Jr.: *See—*
Love, Robert G.; Shelton, Robert Q.; and McCalla, Joseph B., Jr., 4,134,453, Cl. 166-298.000.

McClintock Manufacturing Corporation: *See—*
McClintock, Richard D., 4,135,138, Cl. 335-272.000.

McClintock, Michael. Solar energy collector. 4,134,389, Cl. 126-271.000.

McClintock, Richard D., to McClintock Manufacturing Corporation. Rotary solenoid. 4,135,138, Cl. 335-272.000.
McClung, R. Wayne: *See*—
Levene, Leon; and McClung, R. Wayne, 4,134,746, Cl. 65-30.00E.
McCormick, Dennis J. Water recycle unit-grey water clearifier. 4,134,833, Cl. 210-121.000.
McCrudden, Joseph E.; and Talbot, Robert E., to Interox Chemicals Limited. Bleaching composition. 4,134,850, Cl. 252-186.000.
McDonald, Benjamin J., deceased; and by McDonald, Dorothy H., administratrix. Roller ski apparatus with spring suspension. 4,134,600, Cl. 280-87.04A.
McDonald, Dorothy H., administratrix: *See*—
McDonald, Benjamin J., deceased; and McDonald, Dorothy H., administratrix, 4,134,600, Cl. 280-87.04A.
McDonnell Douglas Corporation: *See*—
Baldwin, Floyd G.; and Voorhees, Stanley V., 4,134,345, Cl. 105-366.00B.
McDonough, Cletus; and Sowinski, Leonard A., to Molex Incorporated. Crimp die with resilient anvil. 4,134,201, Cl. 29-753.000.
McEowen, Victor R. Flexible joint construction. 4,134,701, Cl. 403-34.000.
McGraw, Veral L. Tank heater alarm. 4,135,079, Cl. 219-327.000.
McGregor, Jimmie R., to Harsco Corporation. Method to form a bell end in a plastic pipe. 4,134,949, Cl. 264-519.000.
McHugh, Joseph: *See*—
Kayfetz, Paul D.; McHugh, Joseph; and Dugan, James, 4,134,718, Cl. 431-125.000.
McIntyre, John A. Method of and apparatus for producing images for stereoscopic viewing of annihilation radiation sources. 4,135,089, Cl. 250-313.000.
McKenna, Charles M.: *See*—
Forneris, John L.; Hicks, William W.; Keller, John H.; McKenna, Charles M.; and Seirmarco, James A., 4,135,097, Cl. 250-492.00B.
McKenny, Vernon G.: *See*—
Green, Robert S.; Dozier, Harold W.; and McKenny, Vernon G., 4,135,102, Cl. 307-205.000.
McLaughlin, James F.; and Nelson, Theodore M., to United States of America, Air Force. Pre-TR high power/intermediate power stage apparatus. 4,135,169, Cl. 333-13.000.
McMannis, William T., to General Electric Company. Integrated history recorder for gas turbine engines. 4,135,246, Cl. 364-551.000.
McManus, Joseph H., to Marymac Industries, Inc. Smoking apparatus. 4,134,409, Cl. 131-173.000.
McVey, John K.; Luxon, Bruce A.; and Sharp, Larry L., to Illinois Tool Works Inc. Thermal switch and method of making. 4,135,176, Cl. 337-404.000.
Mead Corporation, The: *See*—
Stoneburner, Leonard G., 4,135,197, Cl. 346-75.000.
Mearl Corporation, The: *See*—
Rieger, Carl J.; and Armanini, Louis, 4,134,776, Cl. 106-291.000.
Measurex Corporation: *See*—
Typpo, Pekka M.; Wennerberg, Gunnar; and Larsen, Tor G., 4,134,211, Cl. 33-147.00L.
Mecca, Angelo R.: *See*—
Sharland, Stanley G.; Mecca, Angelo R.; and Masson, Robert R., 4,134,162, Cl. 4-292.000.
Medelco, Incorporated: *See*—
Stania, Eugene A.; and Philipps, Louis E., 4,135,241, Cl. 364-200.000.
Medica Co., Ltd.: *See*—
Kikuchi, Shuichi, 4,134,666, Cl. 354-313.000.
Mees, Bernhard: *See*—
Hess, Peter; and Mees, Bernhard, 4,135,050, Cl. 560-19.000.
Mehl, Wolfgang, to Sublistatic Holding S.A. Reprography process: color-copying with sublimable dyes. 4,134,676, Cl. 355-77.000.
Meininger, Fritz: *See*—
Fuchs, Hermann; Kapaun, Gustav; and Meininger, Fritz, 4,134,887, Cl. 260-205.000.
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, to Carlo Erba S. p. A. Imidazo[5,1-c][1,4]benzoxazin-1-one. 4,134,974, Cl. 424-248.540.
Melville, John G. E., to Worcester Controls (U.K.) Limited. Annular seals. 4,134,595, Cl. 277-9.000.
Menasha Corporation: *See*—
Witworth, Otis R., 4,134,788, Cl. 162-352.000.
Menchen, Bernie. Cold box with breaker strip. 4,134,518, Cl. 220-431.000.
Mendelsohn, Morris A.; and Izzo, Carl P., to Westinghouse Electric Corp. Abrasion resistant polyurethane article having a high rolling coefficient of friction. 4,134,883, Cl. 528-63.000.
Menke, Russell O.; Jacob, Jose T.; and Hwa, Chih M., to Chemed Corporation. Azole-phosphate corrosion inhibiting composition and method. 4,134,959, Cl. 422-16.000.
Menti, Frank, Jr., to Parker-Hannifin Corporation. Weld joint. 4,134,606, Cl. 285-21.000.
Mercer, Basil W.: *See*—
Dawson, Gaynor W.; and Mercer, Basil W., 4,134,831, Cl. 210-33.000.
Merck & Co., Inc.: *See*—
Baldwin, John J., 4,134,983, Cl. 424-267.000.
Cheng, Hsiung, 4,135,005, Cl. 426-659.000.
Fisher, Michael H.; and Tolman, Richard L., 4,134,973, Cl. 424-180.000.
Graham, Glen D.; and Sklarz, William A., 4,134,214, Cl. 34-5.000.
Rein, Alan J.; Saperstein, David D.; and Pines, Seemon H., 4,134,965, Cl. 423-328.000.
Mercurio, Andrew, to Rohm and Haas Company. Benzoic acid terminated oligoesters as melt flow modifiers of thermoplastic coatings and powders. 4,135,009, Cl. 427-195.000.
Merman, Richard J. Continuous beverage brewer. 4,134,332, Cl. 99-289.00T.
Merrell Toraude et Compagnie: *See*—
Bey, Philippe; and Jung, Michel, 4,134,918, Cl. 260-583.0GG.
Messerschmidt, Eugene D. Helicopter control device. 4,134,560, Cl. 244-83.00F.
Messinger, Roderick G. Fluid flow stop valve. 4,134,573, Cl. 251-324.000.
Metcalfe, Kenneth A.; and Clements, Alwyn S., to Commonwealth of Australia, The. Selective photoconductor-binder coating of absorbent surfaces. 4,134,762, Cl. 96-1.50R.
Mettler Instrumente AG: *See*—
Luchinger, Paul; and Realini, Enrico, 4,134,468, Cl. 177-210.0EM.
Michels, Charles E., to Reliance Electric Company. Apparatus for wrapping with stretch film. 4,134,246, Cl. 53-228.000.
Microwave Semiconductor Corporation: *See*—
Wade, Paul C., 4,135,168, Cl. 331-108.00R.
Miguel, Fred. Stove switch cover lock. 4,134,386, Cl. 126-42.000.
Miles Laboratories, Inc.: *See*—
Bogusiaski, Robert C.; Carrico, Robert J.; and Christner, James E., 4,134,792, Cl. 195-99.000.
Milford, Alan H.; and Proulx, Oliver J., to Olin Corporation. Method and apparatus for making foam. 4,134,945, Cl. 264-46.200.
Miller, Albert W.: *See*—
Kurland, Jeffrey B.; and Miller, Albert W., 4,135,199, Cl. 346-165.000.
Miller, Laverne J.: *See*—
Kennepohl, Gerhard J. A.; Miller, Laverne J.; and Bean, David C., 4,135,022, Cl. 428-143.000.
Milligan, John G., to Texaco Development Corp. Nonionic surfactant with low pour point. 4,134,854, Cl. 252-351.000.
Milliken Research Corporation: *See*—
Thompson, Dewey T.; Parkins, John H.; and Nichols, James B., 4,134,724, Cl. 8-54.200.
Milly, George H., to Geomet Exploration, Inc. Method of quantifying fugitive emission rates from pollution sources. 4,135,092, Cl. 250-343.000.
Mimura, Masahisa, to Teijin Cordley Ltd. Process for producing microporous sheet materials. 4,135,011, Cl. 427-246.000.
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Tsuruga, Kouji, to Argus Chemical Corporation. Aromatic carboxylic acid ester stabilizers for PVC resins. 4,134,868, Cl. 260-23.0XA.
Mincer, Joseph L.: *See*—
Gibson, Harry W.; Bailey, Frank C.; and Mincer, Joseph L., 4,134,760, Cl. 96-1.0SD.
Minegishi, Yutaka; and Arai, Haruhiko, to Kao Soap Co., Ltd. Softener composition for fabrics. 4,134,840, Cl. 252-8.900.
Minnesota Mining and Manufacturing Company: *See*—
Heltemes, Eugene C., 4,135,183, Cl. 340-572.000.
Huffman, William A.; Birkeland, Stephen P.; and O'Leary, Kevin P., 4,134,764, Cl. 96-1.600.
Minolta Camera Kabushiki Kaisha: *See*—
Suzuki, Takeshi; Hirata, Hiroshi; and Kondo, Takashi, 4,134,649, Cl. 352-27.000.
Minorikawa, Hitoshi; Hohsho, Yukio; and Ueno, Sadayasu, to Hitachi, Ltd. Liquid level detecting apparatus. 4,135,186, Cl. 340-622.000.
Minter, Thomas F.: *See*—
Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., 4,134,783, Cl. 156-396.000.
Mirr, Gordon J., deceased (by Mirr, Marie, executrix); Lestan, Ivan; and Stevens, Myron T., to Outboard Marine Corporation. Method for producing foamed articles. 4,134,942, Cl. 264-26.000.
Mirr, Marie, executrix: *See*—
Mirr, Gordon J., deceased; Lestan, Ivan; and Stevens, Myron T., 4,134,942, Cl. 264-26.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Hiramatsu, Katsuzo, 4,134,593, Cl. 274-9.00A.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.
Mitsubishi Paper Mills, Ltd.: *See*—
Emoto, Kazuhiro; Yabuta, Kenji; Yamashita, Kiyoshi; and Futaki, Kiyoshi, 4,134,770, Cl. 96-100.00R.
Yoshida, Akio; Tanaka, Akira; and Tsubai, Yasuo, 4,134,769, Cl. 96-76.00R.
Mitsubishi Rayon Co., Ltd.: *See*—
Otani, Hisao; Furuno, Akihisa; and Ohshima, Iwao, 4,134,871, Cl. 260-29.60H.
Mitsuhashi, Sadayuki: *See*—
Nago, Kazuyoshi; Mitsuhashi, Sadayuki; and Yoshino, Tetsuo, 4,135,136, Cl. 335-112.000.
Mitsui Petrochemical Industries, Ltd.: *See*—
Matsuzawa, Norio; Oi, Hidesaburo; Nishimura, Hiroshi; Wada, Shigeru; and Sasaki, Juntaro, 4,135,045, Cl. 526-114.000.
Tomoshige, Toru; Nagano, Riichiro; and Imamura, Tetsuo, 4,134,927, Cl. 260-878.00R.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Miyata, Katsuharu; Hirai, Yutaka; and Yoshida, Hiroshi, 4,134,880, Cl. 560-24.000.
Miyahara, Shinobu: *See*—
Kawawa, Takaho; Sato, Hideki; and Miyahara, Shinobu, 4,134,440, Cl. 164-4.000.

Miyata, Katsuharu; Hirai, Yutaka; and Yoshida, Hiroshi, to Mitsui Toatsu Chemicals, Incorporated. Process for producing an aromatic urethane from nitro compounds, hydroxyl compounds and carbon monoxide using metal-Lewis acid-ammonia catalyst systems. 4,134,880, Cl. 560-24.000.

Miyazi, Kazumi: *See*—
Ichikawa, Hiroki; and Miyazi, Kazumi, 4,135,220, Cl. 360-137.000.

Mobil Oil Corporation: *See*—
Allen, Wallace B.; Harrell, John W.; and Webster, William W., 4,134,799, Cl. 204-1.00T.

Mobil Tyco Solar Energy Corporation: *See*—
Tornstrom, Eric, 4,134,387, Cl. 126-270.000.

Mochizuki, Keiichi: *See*—
Ichiko, Tadatoshi; Isono, Takeo; and Mochizuki, Keiichi, 4,134,772, Cl. 106-45.000.

Moczygemba, George A., to Phillips Petroleum Company. Tetrablock polydienes. 4,134,928, Cl. 260-879.000.

Modern Mold & Tool Corp.: *See*—
Liguori, Alfred T., 4,134,199, Cl. 29-441.0BP.

Modurkay, Esteban. Safety device for use on a bicycle wheel. 4,135,229, Cl. 362-72.000.

Mohwinkel, Franz, to Washington Nu Process, Inc. Process of preserving vegetable produce, such as potatoes, in closed packages. 4,135,003, Cl. 426-412.000.

Mok, Chuck K., to RCA Corporation. Dual mode filter. 4,135,133, Cl. 333-73.00W.

Molex Incorporated: *See*—
McDonough, Cletus; and Sowinski, Leonard A., 4,134,201, Cl. 29-753.000.

Mollet, Hans: *See*—
Buchel, Urs; and Mollet, Hans, 4,134,725, Cl. 8-79.000.

Mongelli, Nicola: *See*—
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, 4,134,974, Cl. 424-248.540.

Monheimius, Manfred: *See*—
Beckers, Richard; Wedel, Wedigo V.; and Monheimius, Manfred, 4,135,055, Cl. 174-48.000.

Monotype Corporation Limited, The: *See*—
England, Charles J., 4,134,651, Cl. 354-17.000.

Monsanto Company: *See*—
Crutchfield, Marvin M.; and Upton, Charles J., 4,134,902, Cl. 260-340.600.
Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,134,877, Cl. 260-45.9NP.

Monsanto Research Corporation: *See*—
Cass, Robert A.; Butler, John M.; and Janzow, Edward F., 4,134,937, Cl. 260-862.000.

Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, to Monsanto Company. Flame retardant phosphoramidate compositions. 4,134,877, Cl. 260-45.9NP.

Morgan, Charles R., to W. R. Grace & Co. Preparation of thioethers using a benzopinacol initiator. 4,135,047, Cl. 544-219.000.

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Morikawa, Shinsuke: *See*—
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Morley, Wendy E.: *See*—
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Morlock, Ruben D., to Haybuster Manufacturing, Inc. Grinder cylinder control for waste paper grinder. 4,134,554, Cl. 241-35.000.

Morokuma, Tadashi; and Oinoue, Kenichi, to Olympus Optical Co. Ltd. Method of and apparatus for monitoring hot developing treatment. 4,134,664, Cl. 354-298.000.

Morris, Robert H.: *See*—
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., 4,134,306, Cl. 74-29.000.

Morrison, Glenn C.: *See*—
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Morton-Norwich Products, Inc.: *See*—
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Moss, Philip H.; and Nieh, Edward C. Y., to Texaco Development Corp. N-polyalkoxyalkyl acrylamides or methacrylamides. 4,134,916, Cl. 260-561.00N.

Mostek Corporation: *See*—
Green, Robert S.; Dozier, Harold W.; and McKenny, Vernon G., 4,135,102, Cl. 307-205.000.

Mosyagin, Vladimir M.: *See*—
Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., 4,134,482, Cl. 192-91.00R.

Motorola, Inc.: *See*—
Kommrusch, Richard S., 4,135,193, Cl. 343-854.000.
Parmet, Bernard S., 4,135,158, Cl. 325-317.000.
Schafft, Hugo W.; and Jaanson, Ernest, 4,134,384, Cl. 125-21.000.
Stange, Thomas P., 4,135,105, Cl. 307-225.00R.

Motta, Carmelo. Woven slide fastener. 4,134,184, Cl. 24-205.16C.

Mountain, Charles F.: *See*—
Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., 4,134,678, Cl. 356-39.000.

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Moyer, Jay B. S., 4,134,624, Cl. 312-204.000.

Moyer, Jay B. S., to Moyer Diebel Limited. Framing unit for a plurality of rectangular structures. 4,134,624, Cl. 312-204.000.

Muhler, Joseph C.; Kleber, Carl J.; and Kelly, Ray G., to Indiana University Foundation. Noncariogenic comestible. 4,134,999, Cl. 426-3.000.

Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, to Fuji Photo Film Co., Ltd.; and Asahi Denka Kogyo K.K. Process for production of magnetic recording media and recording media. 4,135,036, Cl. 428-413.000.

Mukasa, Masayoshi; and Fujimaki, Shigeaki, to Usui International Industry, Ltd. High pressure fuel injection pipe. 4,134,430, Cl. 138-109.000.

Muller, Hans-Georg: *See*—
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Muller, Rolf Erich: *See*—
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Multi-Pak Corporation: *See*—
O'Rourke, James; and Feldberg, Murray, 4,134,335, Cl. 100-98.00R.

Mumford, George V., to Owens-Illinois, Inc. Child-resistant safety closure. 4,134,513, Cl. 215-216.000.

Munz, Eberhard: *See*—
Knitsch, Karl-Wolfgang; Hagen, Alexander; Munz, Eberhard; and Determann, Helmut, 4,134,943, Cl. 264-28.000.

Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Printed circuit unit for a camera. 4,134,654, Cl. 354-60.00R.

Murakami, Hiroyasu: *See*—
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, 4,134,660, Cl. 354-289.000.

Murakoshi, Makoto: *See*—
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Murphy, William O.: *See*—
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Murrell, Lawrence L.: *See*—
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Muschelknautz, Edgar: *See*—
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Musz, Andrew; Hoehler, John A.; Hilt, Susan F.; and Kielmeyer, William H., to Johns-Manville Corporation. Method of providing thermal insulation and product therefor. 4,134,242, Cl. 52-309.100.

N.K.F. Kabel B.V.: *See*—
Vloedman, Theodoris H. A., 4,135,054, Cl. 174-19.000.

N. V. Bekaert S. A.: *See*—
Nijs, Marc; Vanassche, Frits; and De Kok, Johannes A., 4,134,197, Cl. 29-458.000.

Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, to Mitsubishi Jukogyo Kabushiki Kaisha; and Kobe Steel, Ltd. Titanium alloy with high internal friction and method of heat-treating the same. 4,134,758, Cl. 75-175.500.

Nagai, Tadashi: *See*—
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Nagaitsev, Vladimir A.: *See*—
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Nagano, Riichiro: *See*—
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Nagata, Shiro: *See*—
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Nagel, Robert H.: *See*—
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Naglieri, Anthony N.; and Rizkalla, Nabil, to Halcon International, Inc. Process for preparing carboxylic acids. 4,134,912, Cl. 562-579.000.

Nago, Kazuyoshi; Mitsuhashi, Sadayuki; and Yoshino, Tetsuo, to Nippon Electric Co., Ltd. Electromagnetic switch matrix device. 4,135,136, Cl. 335-112.000.

Nagy, Edward J.: *See*—
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Nakagawa, Kiyoshi: *See*—
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Nakagawa, Tadashi: *See*—
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Nakajimi, Maki: *See—*
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Nakamura, Matsuaki; Kitamoto, Tatsuji; Tamai, Yasuo; and Kurokawa, Koshu, to Fuji Photo Film Co., Ltd. Magnetic recording and reproducing apparatus. 4,135,218, Cl. 360-127.000.
Nakamura, Matsuaki: *See—*
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Nakano, Akiko; and Nakano, Hisako, to Nakano Shokai, Ltd. Packing means for collared clothes and method. 4,134,524, Cl. 223-71.000.
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Narikiyo, Kenji, to Hitachi, Ltd. Starting device for discharge lamp. 4,135,114, Cl. 315-47.000.
Narumi Seito Kabushiki Kaisha: *See—*
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Nasu, Rikuo: *See—*
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National Distillers and Chemical Corp.: *See—*
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NCR Corporation: *See—*
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Neilson, Scott B., to Singer Company, The. Omega simulation. 4,134,217, Cl. 35-10.200.
Nelson, Joseph E., to Hopping, John W., a part interest. Vehicle mirror cleaning device. 4,134,612, Cl. 296-84.00B.
Nelson, Larry A.: *See—*
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Nelson, Robert W.; and Pierce, Steven M., to Deere & Company. Zero clearance spline coupling. 4,134,700, Cl. 403-334.000.
Nelson, Theodore M.: *See—*
McLaughlin, James F.; and Nelson, Theodore M., 4,135,169, Cl. 333-13.000.
Nelson, William F.: *See—*
Klein, Richard M.; Nelson, William F.; Pappalardo, Romano G.; and Riseberg, Leslie A., 4,134,851, Cl. 252-301.40P.
Nemoto, Ichiro; Nakagawa, Tadashi; and Koyama, Mitsuo, to Seiko Koki Kabushiki Kaisha. Camera shutter control means. 4,134,659, Cl. 354-267.000.
Neumann, Leopold: *See—*
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Newell, Chester W.: *See—*
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Newell Research Corporation: *See—*
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Newland, Gordon C.: *See—*
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Nihon Denshi Kabushiki Kaisha: *See—*
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Nijs, Marc; Vanassche, Frits; and De Kok, Johannes A., to N. V. Bekaert S. A. Method of coating pipe with continuously reinforced concrete. 4,134,197, Cl. 29-458.000.
Nikonets, Leonid A.: *See—*
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Nilsson, Bengt, to ASEA. Means for mechanical transmission. 4,134,307, Cl. 74-66.000.
Nilsson, Uno S.: *See—*
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Nippon Electric Co., Ltd.: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
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Nippon Kokuyu Tetsudo: *See—*
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Nissan Motor Company, Limited: *See—*
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Iizuka, Haruhiko; and Fukasawa, Noburu, 4,134,261, Cl. 60-276.000.
Koseki, Shyushi; and Koizumi, Ken-ichi, 4,134,375, Cl. 123-119.0EC.
Sugihara, Kunihiko; Nagai, Tadashi; and Hase, Yoshifumi, 4,134,262, Cl. 60-289.000.
Nitschke, Achim. Method and apparatus for the manufacture of hollow bodies. 4,134,284, Cl. 72-84.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Otani, Hisao; Furuno, Akihisa; and Ohshima, Iwao, 4,134,871, Cl. 260-29.60H.
Niwa, Takao; and Sato, Yasushi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Automobile oil pan assembly. 4,134,380, Cl. 123-142.50R.
Noda, Atsushi: *See—*
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Noe, Oskar F., to BWG Bergwerk- und Walzwerk-Maschinenbau GmbH. Strip-processing lines with cold-rolling stands. 4,134,283, Cl. 72-8.000.
Nomura, Katsuhiko, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for indicating the advancing of film in a camera being taken up or rewound. 4,134,657, Cl. 354-212.000.
Noren, Daniel W.: *See—*
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Noren, Tore H. Tandem rack dishwashing machine with time-controlled washing and rinsing cycles. 4,134,413, Cl. 134-47.000.
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Lichtenstein, Nachum, 4,135,064, Cl. 179-170.00G.
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Norton, Melvin M.; and Parker, Byron R., to Tennessee Valley Authority. Granular ammonium phosphate sulfate and urea-ammonium phosphate sulfate using a common pipe-cross reactor. 4,134,750, Cl. 71-29.000.
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Novy Velinger, Antonio. Process for briqueting fluorspar with sodium carbonate. 4,134,946, Cl. 264-63.000.
Nugent, Edward L., to Becton, Dickinson and Company. One-way evacuated tube stopper. 4,134,512, Cl. 215-247.000.
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den Toonder, Pieter, 4,135,157, Cl. 325-308.000.
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Obonaga-Calle, Tulio E. Burial field and method of constructing same. 4,134,239, Cl. 52-133.000.
Oda, Isao; and Kaneno, Masayuki, to NGK Insulators, Ltd. Sintered silicon nitride body and a method of producing the same. 4,134,947, Cl. 264-65.000.
Oda, Shin-ichi; Okamoto, Tosaku; Nakanishi, Akira; and Kuroda, Takio, to Kanzaki Paper Manufacturing Co., Ltd.; and Sanko Kagaku Co., Ltd. Method for the production of a color developer and the obtained color developer. 4,134,847, Cl. 252-62.10P.
Oda, Yoshio; Uchida, Keiichi; and Morikawa, Shinsuke, to Asahi Glass Company Ltd. Method of purifying hexafluoropropylene oxide. 4,134,796, Cl. 203-63.000.
O'Farrell, Charles P.: *See*—
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Ogawa, Hiroshi; Nakamura, Matsuaki; Aonuma, Masashi; and Tamai, Yasuo, to Fuji Photo Film Co., Ltd. Magnetic recording material. 4,135,016, Cl. 428-64.000.
Ogura, Toshiaki; Saito, Toshio; Higashi, Hideo; and Yamazaki, Yoshimichi, to Banzai, Ltd. CRT Display of condition in cylinders of internal combustion engine. 4,135,154, Cl. 324-16.00S.
Oguri, Tadakazu: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
Ohmori, Hisashi; Ohnishi, Masayuki; and Yamamoto, Joshiji, to Kawasaki Seitetsu K.K. Method of enlarging the strand width of a steel strand during continuous casting. 4,134,441, Cl. 164-4.000.
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Ohsaki, Mikio; Kamada, Hiroshi; Kakimoto, Kohichi; Suzuki, Hitoshi; and Hakaridani, Mitsuhiro, to Sharp Kabushiki Kaisha. Microfiche retrieval system with a printer operable in four modes. 4,134,674, Cl. 355-43.000.
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Okano, Hiroshi; and Akai, Wataru, to Toyota Jidosha Kogyo Kabushiki Kaisha. Driven mechanism for a rotatory heat regenerator. 4,134,308, Cl. 74-411.000.
Okano, Hiroshi; and Iwatsuki, Masayuki, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Nippondenso Co., Ltd. Sealing mechanism for rotative heat regenerator. 4,134,446, Cl. 165-9.000.
Okano, Shohei: *See*—
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Okazaki, Mitsuo; Yamaguchi, Akihiro; Kozima, Akio; and Sasaki, Masaomi, to Ricoh Co., Ltd. 3-(9-Fluorenylidene)carbazole derivatives and electrophotographic light-sensitive material containing same. 4,134,761, Cl. 96-1.50R.
Okonowitz, Hyman, to Jameco Industries, Inc. Faucet valve for sinks, wash basins and other applications. 4,134,420, Cl. 137-315.000.
Okuno, Youichi: *See*—
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O'Leary, Kevin P.: *See*—
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Olin Corporation: *See*—
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Milford, Alan H.; and Proulx, Oliver J., 4,134,945, Cl. 264-46.200.
Oliver, Donald W.; and Culver, Richard B., to Dresser Industries, Inc. Method and apparatus for neutron induced gamma ray logging for lithology identification. 4,135,087, Cl. 250-270.000.
Olsen, Roy W.: *See*—
Badberg, Melvin C.; Hutchins, Thomas G.; Olsen, Roy W.; and Zachmeyer, James W., 4,134,784, Cl. 156-423.000.
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Omori, Mamoru: *See*—
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; and Kayano, Hideo, 4,134,759, Cl. 75-204.000.
Oosake, Shigenori; Murakoshi, Makoto; and Komura, Tsuneo, to Fuji Photo Film Co., Ltd. Film positioning mechanism for a microfilm camera. 4,134,675, Cl. 355-54.000.
Opheij, Willem G.: *See*—
Greve, Peter F.; and Opheij, Willem G., 4,135,207, Cl. 358-128.000.
Optilon W. Erich Heilmann GmbH: *See*—
Heimberger, Helmut, 4,134,185, Cl. 24-205.16C.
Oradat, Frank R.: *See*—
Balke, Rodney W.; Oradat, Frank R.; and Haga, Cecil W., 4,134,309, Cl. 74-573.00F.
Ore-Ida Foods, Inc.: *See*—
Hodges, Joseph L.; and Green, Glen R., 4,135,002, Cl. 426-482.000.
O'Reilly, Raymond F. Emergency fireman life-support device. 4,134,457, Cl. 169-16.000.
Orford, Richard J.: *See*—
Glaser, Paul F.; and Orford, Richard J., 4,134,537, Cl. 235-379.000.
Orkin, Stanley S.; and Nagy, Edward J., to Kamatics Corporation. Molded plastic bearing assembly. 4,134,842, Cl. 252-12.600.
O'Rourke, James; and Feldberg, Murray, to Multi-Pak Corporation. Waste compacting apparatus. 4,134,335, Cl. 100-98.00R.
Orshansky, Betty B., executrix: *See*—
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,310, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,311, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased (by Orshansky, Betty B., executrix); and Weseloh, William E., to Orshansky Transmission Corporation. Hydromechanical transmission with hydrodynamic drive. 4,134,310, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased (by Orshansky, Betty B., executrix); and Weseloh, William E., to Orshansky Transmission Corporation. Hydromechanical transmission with two planetary assemblies that are clutchable to both the input and output shafts. 4,134,311, Cl. 74-687.000.
Orshansky Transmission Corporation: *See*—
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,310, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,311, Cl. 74-687.000.
Orsos, Nicholas M. Ticketing system. 4,134,222, Cl. 40-606.000.
Ortiz, Nilson V., to Ortiz, Nilson V.; and Rollojay, Francisco R., part interest to each. Inflated toy balloon launcher. 4,134,228, Cl. 46-88.000.
Oschell, Francis J.; and Libutti, Bruce L., to Betz Laboratories, Inc. Aqueous solution of sodium metasilicate and N-aminoethyl ethanolamine as a cold-end additive. 4,134,727, Cl. 422-9.000.
Oschell, Francis J.: *See*—
Libutti, Bruce L.; and Oschell, Francis J., 4,134,728, Cl. 422-9.000.
Libutti, Bruce L.; and Oschell, Francis J., 4,134,729, Cl. 422-9.000.
Oser, Polat: *See*—
Volker, Herbert M.; Oser, Polat; Doring, Gerhard; and Koch, Harald, 4,134,733, Cl. 422-177.000.
Osterloh, Rolf: *See*—
Kuesters, Werner; Osterloh, Rolf; and Jacobi, Manfred, 4,134,813, Cl. 204-159.240.
Oswald, Alexis A.; and Murrell, Lawrence L., to Exxon Research & Engineering Co. Silylhydrocarbyl phosphine transition metal complexes. 4,134,906, Cl. 260-429.0CY.
Otaki, Yukio; Oka, Ken-ichiro; Koide, Kazuyoshi; and Nakagawa, Kiyoshi, to Toray Industries Inc. Method and apparatus for preparing false twisted yarns. 4,134,252, Cl. 57-284.000.
Otani, Hisao; Furuno, Akihisa; and Ohshima, Iwao, to Nitto Chemical Industry Co., Ltd.; and Mitsubishi Rayon Co., Ltd. Method for reducing the adhesiveness of hydrogel-like polymer by adding polyethylene glycol. 4,134,871, Cl. 260-29.60H.
Otenbaker, James T. Air ventilation system. 4,134,394, Cl. 126-299.00D.
Otis Engineering Corporation: *See*—
Taylor, Donald F., 4,134,454, Cl. 166-320.000.
Ott, Edward R., to Clark Equipment Company. Side shoe assembly for a crane boom. 4,134,236, Cl. 52-118.000.
Oura, Toshio, to Nippon Electric Co., Ltd. Constant voltage circuit comprising an IGFET and a transistorized inverter circuit. 4,135,125, Cl. 323-22.00R.
Outboard Marine Corporation: *See*—
Mirr, Gordon J., deceased; Lestan, Ivan; and Stevens, Myron T., 4,134,942, Cl. 264-26.000.
Owens-Corning Fiberglas Corporation: *See*—
Davidson, Franklin E.; and Pearson, Lee E., 4,134,431, Cl. 138-109.000.
Owens-Illinois, Inc.: *See*—
Chang, Long F., 4,134,510, Cl. 215-1.00C.
Mumford, George V., 4,134,513, Cl. 215-216.000.
Oxy Metal Industries Corporation: *See*—
Herr, Roy W., 4,134,802, Cl. 204-43.00T.
Oya, Akiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Key assigner for use in electronic musical instrument. 4,134,320, Cl. 84-1.010.
Ozero, Brian J., to Halcon Research & Development Corporation. Process for recovery of ethylene oxide containing low levels of aldehydic impurities. 4,134,797, Cl. 203-75.000.
Paakkinen, Ilmari; Hakkinen, Seppo; and Matula, Jouni, to Enso-Gutzeit Osakeyhtio. Mounting base of a disk refiner. 4,134,562, Cl. 639-.

Pacifici, James G.; and Newland, Gordon C., to Eastman Kodak Company. Radiation curable cellulose ester-acrylate compositions. 4,134,809, Cl. 204-159.120.

Paget, Charles J.; and Wikel, James H., to Eli Lilly and Company. 1-Acyl-4-substituted phenyl thiosemicarbazides. 4,134,914, Cl. 260-552.0SC.

Palka, James J., to General Bathroom Products Inc. Bathroom cabinet. 4,134,625, Cl. 312-206.000.

Pals, Raimond, to FMC Corporation. Production of low density granular sodium tripolyphosphate. 4,134,963, Cl. 423-315.000.

Panke, Hans L.; Steckelberg, Willi; Quack, Jochen M.; and Reng, Alwin, to Hoechst Aktiengesellschaft. Quaternary ammonium compounds and their use in hair care compositions. 4,134,970, Cl. 424-70.000.

Pappalardo, Romano G.: *See*—
Klein, Richard M.; Nelson, William F.; Pappalardo, Romano G.; and Riseberg, Leslie A., 4,134,851, Cl. 252-301.40P.

Pardubn, Alfred P. Antenna mounting device attached to an automobile trunk. 4,135,192, Cl. 343-715.000.

Park, Kisoon; and Lowery, Robert H., to Union Carbide Corporation. Fiber lubricants. 4,134,841, Cl. 252-8.900.

Park, Vernon L.: *See*—
Kastilahn, William W.; Garrett, Robert R.; and Park, Vernon L., 4,135,053, Cl. 13-25.000.

Parker, Byron R.: *See*—
Norton, Melvin M.; and Parker, Byron R., 4,134,750, Cl. 71-29.000.

Parker-Hannifin Corporation: *See*—
Koski, Jerry V., 4,134,607, Cl. 285-173.000.
Menti, Frank, Jr., 4,134,606, Cl. 285-21.000.

Parker, John A.: *See*—
Kourtides, Demetrius A.; and Parker, John A., 4,135,019, Cl. 428-117.000.

Parker, Roland: *See*—
Warburton, Geoffrey; and Parker, Roland, 4,134,353, Cl. 112-265.000.

Parkins, John H.: *See*—
Thompson, Dewey T.; Parkins, John H.; and Nichols, James B., 4,134,724, Cl. 8-54.200.

Parkinson, David B.; and Konishi, James T., to Gould Inc. Composite battery plate grid. 4,134,192, Cl. 29-2.000.

Parkinson, Thomas M.: *See*—
Johnson, Bernard A.; and Parkinson, Thomas M., 4,134,464, Cl. 177-3.000.

Parmet, Bernard S., to Motorola, Inc. Universal automotive electronic radio. 4,135,158, Cl. 325-317.000.

Parshin, Dmitry N.: *See*—
Gupalo, Jury D.; Nagaitsev, Vladimir A.; Troitsky, Vladimir A.; Bely, Nikolai G.; Parshin, Dmitry N.; and Zhinzhikov, Pavel A., 4,135,123, Cl. 323-56.000.

Passantino, Thomas: *See*—
DiMille, Dante; Dredger, Edward; and Passantino, Thomas, 4,134,599, Cl. 280-87.010.

Patchell, Albert G.; Murphy, William O.; and Lloyd, Ronald, to Smith & Nephew Plastics Ltd. Net-like product produced by stretching a film composed of two incompatible polymers. 4,135,021, Cl. 428-134.000.

Patchell, Albert G.: *See*—
Dow, James; Lloyd, Ronald; and Patchell, Albert G., 4,134,951, Cl. 264-147.000.
Lloyd, Ronald; Patchell, Albert G.; Murphy, William O.; and Herbert, Peter J., 4,135,023, Cl. 428-167.000.

Patillet, Jean; and Issenmann, Olivier, to Geoservices; and Societe Nationale Elf Aquitaine (Production). Device for simultaneously measuring various parameters of the drilling fluid. 4,134,294, Cl. 73-153.000.

Patzke, Robert C.; and DeRyke, Thomas V., to Addressograph-Multigraph Corporation. Cap assembly and lock for aqueous ammonia container. 4,134,522, Cl. 222-153.000.

Payne, Robert D.; and Kirsanoff, Boris J., to Continental Group, Inc., The. Charging device for basecoat charging of can ends. 4,135,085, Cl. 250-325.000.

Pearce, Charles W.: *See*—
Lavigna, Robert J.; Pearce, Charles W.; and Reusser, Raymond E., 4,134,785, Cl. 156-601.000.

Pearlman, Lawrence. Adjustable positioning means for orthodontic brackets. 4,134,208, Cl. 32-14.00A.

Pearson, Lee E.: *See*—
Davidson, Franklin E.; and Pearson, Lee E., 4,134,431, Cl. 138-109.000.

Pebler, Alfred R.; and Beckett, Donald W., to Westinghouse Electric Corp. Solid electrolyte sensor for monitoring combustibles in an oxygen containing environment. 4,134,818, Cl. 204-195.00S.

Pecht, Adam. Napkin dispensing mechanism. 4,134,521, Cl. 221-213.000.

Pedersen, Robert D.: *See*—
Bayless, Jon W., Sr.; Pedersen, Robert D.; and Bellamy, John C., II, 4,135,057, Cl. 178-67.000.

Peer, Henricus G.: *See*—
van den Ouweland, Godefridus A. M.; and Peer, Henricus G., 4,134,901, Cl. 260-332.30R.

Pelavin, Joseph Y., to Lark Luggage Corporation. Lock cover. 4,134,280, Cl. 70-55.000.

Pelcin, Albert L., to Eastern Company, The. Cam-type door lock with recessed handle. 4,134,281, Cl. 70-208.000.

Pennypacker, Henry S., Jr.: *See*—
Adams, Calvin K.; Goldstein, Mark K.; Hall, Deborah C.; Hench, Larry L.; Madden, Michael C.; Pennypacker, Henry S., Jr.; and Stein, Gerald H., 4,134,218, Cl. 35-17.000.

Peppel, George W., to Ameron, Inc. Automatic core gate. 4,134,569, Cl. 249-179.000.

Percy, Joseph L.; and Duykers, Ludwig R., to United States of America, Navy. Non-linear acoustic transducer. 4,135,142, Cl. 340-8.00R.

Perdue, Bennie G. Rotary flail cutter system. 4,134,204, Cl. 30-276.000.

Peregrino, Luiz; and Throne, Darwin H., to Hewlett-Packard Company. Single sampler heterodyne method for wideband frequency measurement. 4,135,243, Cl. 364-484.000.

Perez, Richard T.: *See*—
Jackley, Robert D.; and Perez, Richard T., 4,134,704, Cl. 408-57.000.

Perper, Edward: *See*—
Post, Herman D.; and Perper, Edward, 4,134,594, Cl. 274-47.000.

Perr, Julius P., to Cummins Engine Company, Inc. Injectors of a fuel supply system for an internal combustion engine. 4,134,549, Cl. 239-92.000.

Perreault, Richard J., to Gould Inc. Electric fuse. 4,135,175, Cl. 337-248.000.

Persson, Anders: *See*—
Ling, Bernt; Persson, Anders; and Soderstrom, Sven-Erik, 4,134,677, Cl. 356-5.000.

Petdoors Limited: *See*—
Dodge, Leonard P.; and Morley, Wendy E., 4,134,232, Cl. 49-386.000.

Peter, Donald: *See*—
Hooper, David C.; Johnson, George A.; and Peter, Donald, 4,134,838, Cl. 252-8.800.

Petersen, Egon N.; and Schrage, Klaus, to Dynamit Nobel Aktiengesellschaft. Ar-octahalogendiphenylether-4,4-dimethanols. 4,134,925, Cl. 568-637.000.

Peterson, Victor S.; and Siewert, Robert D., to United States of America, National Aeronautics and Space Administration. Fine particulate capture device. 4,134,744, Cl. 55-118.000.

Petigara, Ramesh B.: *See*—
Yale, Harry L.; and Petigara, Ramesh B., 4,134,975, Cl. 424-263.000.

Petrella, Ronald. Fishing crab trap. 4,134,226, Cl. 43-102.000.

Petterborg, Emil M.; and Wood, Robert A., to Power View Corporation. Rotation control apparatus. 4,134,646, Cl. 350-289.000.

Pfadenhauer, Berthold: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.

Pfaff Industriemaschinen GmbH, Firma: *See*—
Bolidorf, Kurt; Hager, Walter; and Tolle, Gunter, 4,134,346, Cl. 112-70.000.

Pfau, Jean; Wavre, Alain; and Schneider, Rudolf, to Ateliers des Charmilles, S.A. EDM apparatus and process with control for variable eccentric overcutting. 4,135,070, Cl. 219-69.00M.

Pfeffer, John R., to Consolidated Fiberglass Products Co. Fiberglass mat. 4,135,029, Cl. 428-284.000.

Pfister, Rudolf: *See*—
Hromatka, Otto; Binder, Dieter; Pfister, Rudolf; and Zeller, Paul, 4,134,898, Cl. 260-332.20C.

Pfizer Inc.: *See*—
Althuis, Thomas H.; Czuba, Leonard J.; Hess, Hans-Jurgen E.; and Kadin, Saul B., 4,134,981, Cl. 424-251.000.

Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., to Newell Research Corporation. Dual tape transport system with related method and means for reducing cueing time. 4,135,058, Cl. 179-6.00R.

Phd, Inc.: *See*—
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., 4,134,306, Cl. 74-29.000.

Philippon, Raymond C.; and Hautemont, Jean-Claude H., to Etude et Realization de Chaines Automatiques ERCA. Apparatus for the deposition and preshaping of a band section in a shaping mold. 4,134,717, Cl. 425-383.000.

Philipps, Louis E.: *See*—
Stanis, Eugene A.; and Philipps, Louis E., 4,135,241, Cl. 364-200.000.

Phillips, Benjamin; and Skraba, Walter J., to Union Carbide Corporation. Preparation of 2-cyclopentenyl ethers. 4,134,924, Cl. 568-664.000.

Phillips Petroleum Company: *See*—
Austin, Oliver K., 4,134,966, Cl. 423-456.000.
Hutchinson, William M., deceased; and Hutchinson, Florence M., executrix, 4,134,849, Cl. 252-171.000.
Moczygemba, George A., 4,134,928, Cl. 260-879.000.
Needham, Donald G., 4,134,874, Cl. 260-37.0SB.
Udipi, Kishore; and Hsieh, Henry L., 4,135,037, Cl. 428-414.000.

Philp, Sanborn F., to General Electric Company. Low volume sheet-wound transformer coils with uniform temperature distribution. 4,135,173, Cl. 336-220.000.

Phripp, Clarence F.; and Preston, Norman R. Flush toilet accessory. 4,134,165, Cl. 4-393.000.

Piber, Earl T., to Cutler-Hammer, Inc. Completely insulated toggle switch. 4,135,069, Cl. 200-67.00G.

Pierce, Steven M.: *See*—
Nelson, Robert W.; and Pierce, Steven M., 4,134,700, Cl. 403-334.000.

Piercy, Richard J.; and Woessner, Neal L., to Caterpillar Tractor Co. Flexing beam assembly. 4,134,507, Cl. 214-145.00R.
Pierre, Gerald R., to Pierre, Gerald Roy. Apron and method for precious metal recovery. 4,134,152, Cl. 2-51.000.
Pierre, Gerald Roy: *See*—
Pierre, Gerald R., 4,134,152, Cl. 2-51.000.
Pierson, Joseph E.; and Stookey, Stanley D., to Corning Glass Works. Method of forming transparent and opaque portions in a reducing atmosphere glass. 4,134,747, Cl. 65-30.00R.
Piesik, Edward T., to General Dynamics Corporation. Rocket launcher tube post-launch rear closure. 4,134,327, Cl. 89-1.800.
Pigerol, Charles; de Cointet de Fillain, Paul; Bazile, Yves; Chignac, Michel; and Grain, Claude, to Labaz. 3-Methoxy-4-arylsulphonyloxy-acetophenones. 4,134,909, Cl. 260-456.00P.
Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., to Shell Oil Company. Plant growth regulators. 4,134,752, Cl. 71-103.000.
Pincemin, Marcel, to Compagnie Industrielle des Telecommunications Cit-Alcatel, S.A. Device for blocking a junctor of an automatic switching system. 4,135,061, Cl. 179-18.00E.
Pines, Seemon H.: *See*—
Rein, Alan J.; Saperstein, David D.; and Pines, Seemon H., 4,134,965, Cl. 423-328.000.
Pinsky, Michael L., to FMC Corporation. Isocyanurate specific electrode and method of analysis and quaternary ammonium isocyanuric acid salts therefore. 4,134,798, Cl. 204-1.00T.
Pittsburgh-Des Moines Steel Company: *See*—
Hills, Richard E.; and Neely, Derek K., 4,134,515, Cl. 220-219.000.
Platt, Clark I.; and Clearman, Jack F., to Whirlpool Corporation. Water saver for washer using pumping agitator. 4,134,277, Cl. 68-53.000.
Plibrico Company Inc.: *See*—
Davis, Raymond W.; and Downey, Paul J. J., 4,134,721, Cl. 432-234.000.
Pocock, Robert E.: *See*—
Bohl, Thomas L.; and Pocock, Robert E., 4,134,289, Cl. 73-23.000.
Poirier, J. Leon: *See*—
Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., 4,135,185, Cl. 340-552.000.
Pojurovsky, Vitaly E.: *See*—
Rubashev, Grigory M.; Starostin, Stanislav N.; Pojurovsky, Vitaly E.; and Gruzova, Olga N., 4,135,126, Cl. 323-43.50S.
Polarek, Kenneth J.; and Newsome, John R., to World Color Press, Inc. Card inserter for binding machine or the like. 4,134,579, Cl. 270-52.000.
Polaroid Corporation: *See*—
Friedman, Harvey S., 4,134,655, Cl. 354-86.000.
Grasshoff, J. Michael; and Reid, Jerome L., 4,134,768, Cl. 96-73.000.
Pollono, Louis P., to United States of America, Energy. Pipe support. 4,134,563, Cl. 248-58.000.
Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., to Tsentralny Nauchno-Issledovatelsky Avtomobilny I Avtomotorny Institut. Device to effect control over the friction clutch of a transport vehicle. 4,134,482, Cl. 192-91.00R.
Pool Company: *See*—
Armstrong, James E., 4,134,237, Cl. 52-118.000.
Pool, Joseph R. Combination door stop and catch. 4,134,608, Cl. 292-76.000.
Post, Herman D.; and Perper, Edward, to Robins Industries Corporation. Antistatic record cleaner. 4,134,594, Cl. 274-47.000.
Power Monitors, Inc.: *See*—
Young, Glenn S.; and Laudel, Arthur, Jr., 4,135,101, Cl. 307-39.000.
Power View Corporation: *See*—
Petterborg, Emil M.; and Wood, Robert A., 4,134,646, Cl. 350-289.000.
Powlesland Engineering Limited: *See*—
Bender, Manfred, 4,134,331, Cl. 98-115.0LH.
Pozar, Vojmir: *See*—
Malasek, Jaromir; Kuda, Vladimir; and Pozar, Vojmir, 4,134,434, Cl. 139-429.000.
PPG Industries, Inc.: *See*—
Bologna, John P.; and Lewchuk, Richard R., 4,134,240, Cl. 52-202.000.
Bosso, Joseph F.; and Sturni, Lance C., 4,134,816, Cl. 204-181.00C.
Prameta Prazisionsmetaal -und Kunststofferzeugniss G. Baumann & Co.: *See*—
Schneider, Eberhard; and Vitt, Theodor, 4,134,180, Cl. 16-129.000.
Preston, Norman R.: *See*—
Phripp, Clarence F.; and Preston, Norman R., 4,134,165, Cl. 4-393.000.
Price, Alexander; and Price, Eric A. Fly-tying vise. 4,134,577, Cl. 269-71.000.
Price, Eric A.: *See*—
Price, Alexander; and Price, Eric A., 4,134,577, Cl. 269-71.000.
Prior, Herbert E. Portable scaffold. 4,134,473, Cl. 182-92.000.
Promat Gesellschaft fur moderne Werkstoffe mbH & Co. KG: *See*—
Beckers, Richard; Wedel, Wedigo V.; and Monheimius, Manfred, 4,135,055, Cl. 174-48.000.
Propst, Robert L., to Herman Miller, Inc. Steering apparatus for a trailer vehicle. 4,134,601, Cl. 280-408.000.
Proulx, Oliver J.: *See*—
Milford, Alan H.; and Proulx, Oliver J., 4,134,945, Cl. 264-46.200.
Pruzick, Ronald, to Knogo Corporation. Electronic theft detection system for monitoring wide passageways. 4,135,184, Cl. 340-572.000.
Pugachev, Arkady K.: *See*—
Dunichev, Jury F.; Dushenkov, Anatoly S.; and Pugachev, Arkady K., 4,134,958, Cl. 264-320.000.
Pugsley, Peter C.; and Wood, Peter J., to Crosfield Electronics Limited. Printing methods and apparatus. 4,135,212, Cl. 358-256.000.
Pullman, Burke C. Apparatus for playing games. 4,134,592, Cl. 273-281.000.
Pullman Incorporated: *See*—
Gutridge, Jack E.; and Marulic, Walter J., 4,134,233, Cl. 49-411.000.
Spychalski, Robert A., 4,134,344, Cl. 105-248.000.
Pyatko, Boris N.: *See*—
Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., 4,134,482, Cl. 192-91.00R.
Quack, Jochen M.: *See*—
Panke, Hans L.; Steckelberg, Willi; Quack, Jochen M.; and Reng, Alwin, 4,134,970, Cl. 424-70.000.
Quame, Babington A. Spotting systems and methods pertaining thereto. 4,134,730, Cl. 23-230.00B.
Queen, Daniel L., to Chamberlain Manufacturing Corporation. Narrow angle cylindrical wave full range loudspeaker system. 4,134,471, Cl. 181-147.000.
Queener, Carl A.: *See*—
Johnson, Frederick W.; Queener, Carl A.; and Rogers, James C., 4,134,581, Cl. 271-173.000.
Quigley, Larry L., to Ledex, Inc. Decoder circuit for detecting sequentially presented code digit signals. 4,135,150, Cl. 340-167.00R.
Quiring, Bernd; Wagner, Kuno; and Konig, Joachim, to Bayer Aktiengesellschaft. Dental varnishes. 4,134,935, Cl. 260-859.00R.
R. O. Hull & Company, Inc.: *See*—
Eckles, William E.; and Starinshak, Thomas W., 4,134,803, Cl. 204-52.00R.
Raabe, Gotthold: *See*—
Handtmann, Dieter; and Raabe, Gotthold, 4,134,293, Cl. 73-168.000.
Racal-Zonal Limited: *See*—
Clark, Derek J., 4,134,319, Cl. 83-100.000.
Rader, Robert R.; and Schenk, Ray, to Wirtz Manufacturing Company, Inc., a part interest. Grid stacking arrangement for a battery grid casting machine. 4,134,318, Cl. 83-91.000.
Radford, Ernest R.: *See*—
Crickmore, John D.; and Radford, Ernest R., 4,134,693, Cl. 400-208.000.
Ramos-Caldera, Arturo J. Contact lens for examining the interior of the eye. 4,134,647, Cl. 351-6.000.
Ramsby, Henry S. Holder for skis and poles. 4,134,182, Cl. 24-81.0SK.
Randolph, John E., to Teletype Corporation. Printer carriage. 4,134,695, Cl. 400-320.000.
Raseley, LeRoy J.: *See*—
Boyer, Robert C.; Martin, John A.; Raseley, LeRoy J.; and Stoker, Robert J., 4,134,450, Cl. 165-111.000.
Rashbrook, Robert B.: *See*—
Horner, Patrick J.; and Rashbrook, Robert B., 4,134,876, Cl. 260-45.70P.
Ratier Figeac: *See*—
Belliere, Pierre, 4,134,329, Cl. 92-70.000.
Rawal, Davis I. Solar heat energy transfer system. 4,134,390, Cl. 126-271.000.
Ray, Ranjan; and Hasegawa, Ryusuke, to Allied Chemical Corporation. Iron-boron solid solution alloys having high saturation magnetization. 4,134,779, Cl. 148-121.000.
Raytheon Company: *See*—
Schloemann, Ernst F. R. A., 4,135,195, Cl. 346-74.100.
RB Toy Development: *See*—
Kupperman, Sam; and Kupperman, Dennis, 4,134,227, Cl. 46-86.00R.
RCA Corporation: *See*—
Bloom, Allen; and Hung, Ling K., 4,134,888, Cl. 260-207.100.
Mok, Chuck K., 4,135,133, Cl. 333-73.00W.
Shanley, Robert L., II, 4,135,200, Cl. 358-21.000.
Read, Norman W., to Dresser Industries, Inc. Oilwell tubing tester with trapped valve seal. 4,134,455, Cl. 166-334.000.
Readal, Gerald J.; Tiskus, John R.; and Tomcanin, William J., to United States Steel Corporation. Automatic coating weight controls for automatic coating processes. 4,135,006, Cl. 427-10.000.
Realini, Enrico: *See*—
Luchinger, Paul; and Realini, Enrico, 4,134,468, Cl. 177-210.0EM.
Rebuck, Neal D.; and Conte, Alfeo A., Jr., to United States of America, Navy. Deuterated lubricant. 4,134,843, Cl. 252-28.000.
Recognition Equipment Incorporated: *See*—
Carlson, Clifford H., 4,135,148, Cl. 340-146.30H.
Redpath, Donald J., to United Aniline Co. Package of biologically active material stored at a cryogenic temperature at which it is inactive and method of making the same. 4,134,359, Cl. 116-219.000.
Regal Ware, Inc.: *See*—
Heermans, Thomas W., 4,134,358, Cl. 116-70.000.
Regie Nationale des Usines Renault: *See*—
Lallement, Serge; and Martineau, Philippe, 4,134,416, Cl. 137-38.000.
Reid, Jerome L.: *See*—
Grasshoff, J. Michael; and Reid, Jerome L., 4,134,768, Cl. 96-73.000.
Reid, Michael G.: *See*—
Burlew, Leroy E.; Reid, Michael G.; and Hunt, William E., 4,134,672, Cl. 355-14.000.

Reider, Samuel B.: *See—*
Lefebvre, Arthur H.; Reider, Samuel B.; and Tomlinson, Jerry G., 4,134,260, Cl. 60-261.000.

Reimann, Robert C., to Carrier Corporation. Protection circuit for a dual source refrigeration unit. 4,134,272, Cl. 62-115.000.

Reimer, Ronald A., to Du Pont de Nemours, E. I., and Company. Process for producing a metal hydroxide adduct of a triarylborane. 4,134,923, Cl. 260-606.50B.

Rein, Alan J.; Saperstein, David D.; and Pines, Seemon H., to Merck & Co., Inc. Caustic washed molecular sieves. 4,134,965, Cl. 423-328.000.

Reitner, Wilhelm, to Siemens Aktiengesellschaft. Drum support for electrostatic printer. 4,134,669, Cl. 355-3.0DR.

Reliance Electric Company: *See—*
Michels, Charles E., 4,134,246, Cl. 53-228.000.

Remond, Pierre, to Saurer Diederichs, Societe Anonyme. Mechanical weft-thread selector for a shuttleless loom. 4,134,436, Cl. 139-453.000.

Reng, Alwin: *See—*
Panke, Hans L.; Steckelberg, Willi; Quack, Jochen M.; and Reng, Alwin, 4,134,970, Cl. 424-70.000.

Research Corporation: *See—*
Brownlee, Robert R.; and Tyers, Frank O., 4,134,408, Cl. 128-419.0PS.

Research Institute for Iron, Steel and Other Metals of the Tohoku University, The: *See—*
Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; and Kayano, Hideo, 4,134,759, Cl. 75-204.000.

Respoli, Patricia M. Traveling case for artist brushes. 4,134,525, Cl. 224-46.00R.

Rettig, Charles E.: *See—*
Mann, Stanley L.; and Rettig, Charles E., 4,135,236, Cl. 363-124.000.

Reusser, Raymond E.: *See—*
Lavigna, Robert J.; Pearce, Charles W.; and Reusser, Raymond E., 4,134,785, Cl. 156-601.000.

Reymann, Wolfgang: *See—*
Appel, Adolf; and Reymann, Wolfgang, 4,134,950, Cl. 264-523.000.

Reynolds Metals Company: *See—*
Cvacho, Daniel S.; Haufler, Edwin R.; Wallace, Joseph W.; and Woolard, James M., 4,134,354, Cl. 113-120.00H.
Heflin, Robert L., 4,135,075, Cl. 219-78.140.

Rheinische Braunkohlenwerke Aktiengesellschaft: *See—*
Lorenz, Kurt; Dungs, Horst; and Speich, Peter, 4,134,794, Cl. 201-27.000.

Rhoades, John S., to Kaiser Aluminum & Chemical Corporation. Easy open end. 4,134,517, Cl. 220-268.000.

Ricci, Louis N.: *See—*
Maier, Alfred E.; and Ricci, Louis N., 4,135,072, Cl. 200-308.000.

Richardson, Stanley H.: *See—*
Salensky, George A.; and Richardson, Stanley H., 4,135,014, Cl. 428-35.000.

Richetti, Thomas E. Tri-combination system. 4,134,419, Cl. 137-216.000.

Richmond, Martin R.: *See—*
Sanders, Royden C., Jr.; Richmond, Martin R.; and Cann, Alfred J., 4,135,156, Cl. 325-4.000.

Richter, Hans H. Tentering clip chain. 4,134,189, Cl. 26-89.000.

Ricoh Co., Ltd.: *See—*
Fujimoto, Sakae, 4,135,198, Cl. 346-138.000.
Fujimura, Itaru; and Endo, Katutoshi, 4,134,763, Cl. 96-1.50R.
Okazaki, Mitsuo; Yamaguchi, Akihiro; Kozima, Akio; and Sasaki, Masaomi, 4,134,761, Cl. 96-1.50R.
Suzuki, Takami; and Fukushima, Takashi, 4,134,692, Cl. 400-144.200.

Riddel, John W., to General Motors Corporation. Cruise control system using positive pressure to boost vacuum. 4,134,470, Cl. 180-108.000.

Rieger, Carl J.; and Armanini, Louis, to Mearl Corporation, The. Exterior grade titanium dioxide coated mica. 4,134,776, Cl. 106-291.000.

Riganati, John P.; and Vitols, Visvaldis A., to Rockwell International Corporation. Minutiae pattern matcher. 4,135,147, Cl. 340-146.30E.

Ringfeder GmbH: *See—*
Schafer, Horst-Dieter; Loosen, Paul; Kloren, Ulrich; and Thiele, Hans-Martin, 4,134,699, Cl. 403-13.000.

Ringrose, Peter S.: *See—*
Atherton, Frank R.; Hall, Michael J.; Hassall, Cedric H.; Ringrose, Peter S.; and Lambert, Robert W., 4,134,972, Cl. 424-177.000.

Ringspann Albrecht Maurer K.G.: *See—*
Maurer, Ruprecht; and Timtner, Karlheinz, 4,134,372, Cl. 123-90.280.

Riple, James C., to Garrett Corporation, The. Gas turbine fuel delivery and control system. 4,134,257, Cl. 60-39.030.

Riseberg, Leslie A.: *See—*
Klein, Richard M.; Nelson, William F.; Pappalardo, Romano G.; and Riseberg, Leslie A., 4,134,851, Cl. 252-301.40P.

Ritchie, Dennis M., to Bell Telephone Laboratories, Incorporated. Protection of data file contents. 4,135,240, Cl. 364-200.000.

Ritter, Arthur J.: *See—*
Krolak, Ronald L.; Duke, James T.; and Ritter, Arthur J., 4,134,622, Cl. 305-12.000.

Rizkalla, Nabil: *See—*
Naglieri, Anthony N.; and Rizkalla, Nabil, 4,134,912, Cl. 562-579.000.

Rizzo, Victor L., to Upjohn Company, The. Amidosulfenyl chloride intermediates. 4,134,913, Cl. 260-543.00H.

Robert Bosch GmbH: *See—*
Handtmann, Dieter; and Raabe, Gotthold, 4,134,293, Cl. 73-168.000.
Kehl, Albin; Muller, Hans-Georg; and Scharf, Friedrich, 4,135,155, Cl. 324-178.000.
Kemmner, Ulrich; Ruhl, Karl; and Schillinger, Rainer, 4,134,712, Cl. 417-423.00R.
Kruger, Gunter; Kuttner, Klaus; Widmaier, Manfred; and Leinauer, Erich, 4,134,808, Cl. 204-129.200.
Latsch, Reinhard; Bianchi, Valerio; and Zeller, Hans, 4,134,374, Cl. 123-117.00D.
Stumpp, Gerhard, 4,134,379, Cl. 123-139.0AW.

Roberts, Maurice, to Materials & Methods Limited. Method of treating molten metal. 4,134,757, Cl. 75-130.00R.

Roberts, Stanley M., to Allen & Hanburys Limited. 3-Endo-protected hydroxyl-tricyclo[3,2,0,0^{2,7}]-heptan-6-ones. 4,134,911, Cl. 260-448.80R.

Robertson, Douglas G., to United States of America, Navy. Swimmer protective helmet. 4,134,155, Cl. 2-412.000.

Robins Industries Corporation: *See—*
Post, Herman D.; and Perper, Edward, 4,134,594, Cl. 274-47.000.

Robinson, Paul B.: *See—*
Bogacki, Anthony P.; Farnsworth, Richard G.; Hardy, Samuel G.; Robinson, Paul B.; and Stutt, Charles A., 4,135,181, Cl. 340-310.00A.

Roche, Thomas F. Connector for waterproof rechargeable lamp. 4,134,635, Cl. 339-117.00R.

Rockwell International Corporation: *See—*
Riganati, John P.; and Vitols, Visvaldis A., 4,135,147, Cl. 340-146.30E.

Rod Pierce & Associates: *See—*
Collins, Robert J.; Stutsman, Richard R.; and Youngkin, Theodore C., 4,134,520, Cl. 221-129.000.

Rogers, James C.: *See—*
Johnson, Frederick W.; Queener, Carl A.; and Rogers, James C., 4,134,581, Cl. 271-173.000.

Rogers, John O.; and Gregory, Robert O., to Surface Systems, Inc. Apparatus for detecting wet and icy surface conditions. 4,135,151, Cl. 324-61.00R.

Rogers Mfg. Co., The: *See—*
Iaconetti, Frank A.; Gnora, G. Michael; and Novak, Carl J., 4,134,285, Cl. 72-84.000.

Rogers, Melvin F., to Zenith Radio Corporation. Rectangular color cathode ray tube bulb with integral corner bosses for enhanced implosion protection. 4,135,211, Cl. 358-246.000.

Rogers, Virgil W.: *See—*
Welch, Kenneth L., 4,134,225, Cl. 43-100.000.

Rohm and Haas Company: *See—*
Machleder, Warren H.; and Bollinger, Joseph M., 4,134,846, Cl. 252-51.50A.
Mercurio, Andrew, 4,135,009, Cl. 427-195.000.

Rohringer, Peter: *See—*
Hiestand, Armin; and Rohringer, Peter, 4,135,028, Cl. 428-253.000.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Emrich, Helmut; and Abendroth, Paul, 4,134,582, Cl. 271-237.000.

Rollojay, Francisco R.: *See—*
Ortiz, Nilson V., 4,134,228, Cl. 46-88.000.

Rosen, Neil H.: *See—*
Gianakakos, Spiros; Rosen, Neil H.; and Siminuk, Paul, 4,134,397, Cl. 128-90.000.

Rosenbusch, Doris F. Versatile arm skate. 4,134,584, Cl. 272-117.000.

Rosin, Seymour, to Izon Corporation. Distributed-optical microfiche reader. 4,134,650, Cl. 353-27.00R.

Ross, Joseph A.: *See—*
DiMatteo, Paul; Ross, Joseph A.; and Whiteman, John P., 4,135,190, Cl. 434-105.00R.

Ross, Lawrence J.; and Chiarello, George A., to American Cyanamid Company. Method for the denitrosation of organic nitrosamines. 4,134,917, Cl. 260-577.000.

Ross, Steven G.; and Ladisic, Jeffrey M. Protective safety lock. 4,134,279, Cl. 70-18.000.

Rossberger, Erwin: *See—*
Frohler, Hanns; and Rossberger, Erwin, 4,134,805, Cl. 204-82.000.

Rosselet, Charles R. Waste disposer. 4,134,555, Cl. 241-46.00B.

Rossi, Alessandro: *See—*
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, 4,134,974, Cl. 424-248.540.

Roth, Martin; Kvita, Vratislav; and Greber, Gerd, to Ciba-Geigy Corporation. Imidyl-benzenedicarboxylic acid derivatives. 4,134,895, Cl. 260-326.410.

Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., to United States of America, Air Force. RF loop intruder detection system. 4,135,185, Cl. 340-552.000.

Roubinek, Lubor, to Diamond Shamrock (Polymers) Limited. Nitrate selective amidine ion exchange resins. 4,134,861, Cl. 521-32.000.

Roussel Uclaf: *See—*
Taylor, John B.; and Harrison, Derek R., 4,134,976, Cl. 424-267.000.

Rousset, Paul: *See—*
Stark, Virgil; Vayda, Alexandre; and Rousset, Paul, 4,134,393, Cl. 126-271.000.

Rowley, William N.; Ehret, Gordon F.; and Williams, Robert R., to Wylain, Inc. Filtering system for swimming pools or the like. 4,134,836, Cl. 210-232.000.

Roy, Richard M. Motorcycle racing starting gate. 4,134,230, Cl. 49-49.000.

Royal Industries, Inc.: *See—*
Baker, Charles J., 4,134,503, Cl. 214-46.300.
Rubashev, Grigory M.; Starostin, Stanislav N.; Pojurovsky, Vitaly E.; and Gruzova, Olga N. Device for noncontact switching of loaded transformer tappings. 4,135,126, Cl. 323-43.50S.
Rueger, Rolf, to Rueger SA. Cooking thermometer. 4,134,299, Cl. 73-362.800.
Rueger SA: *See—*
Rueger, Rolf, 4,134,299, Cl. 73-362.800.
Ruell, Hartwig, to Siemens Aktiengesellschaft. Method for coded sequential non-coherent, redundant optical data-storage. 4,135,251, Cl. 365-216.000.
Ruhl, Karl: *See—*
Kemmner, Ulrich; Ruhl, Karl; and Schillinger, Rainer, 4,134,712, Cl. 417-423.00R.
Ruhrchemie Aktiengesellschaft: *See—*
Feichtinger, Hans; Lutze, Siegfried; Birnkraut, Hans-Walter; and Kluy, Werner, 4,134,933, Cl. 260-848.000.
Rush, Kim E., to Kustom Fit Manufacturing Co. Apparatus for marking tire sidewalls. 4,134,362, Cl. 118-211.000.
Rush, William F.: *See—*
Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., 4,134,743, Cl. 55-34.000.
Rychlik, Dalibor: *See—*
Horacek, Oldrich; Silar, Frantisek; and Rychlik, Dalibor, 4,134,433, Cl. 139-383.00B.
Rye, Grover W.; Scarpitti, Anthony J.; and Kersker, Theodore M., to Goodyear Tire & Rubber Company, The. Textile fabric and method of preparation. 4,134,726, Cl. 8-139.100.
Rys, Tadeusz, to Gould Inc. Resilient anti-rebound latch for circuit breaker contacts. 4,135,135, Cl. 335-46.000.
S&C Electric Company: *See—*
Biller, Bruce A., 4,135,174, Cl. 337-186.000.
S.O.M.M.O.S.: *See—*
Binaut, Jean D. E., 4,134,713, Cl. 418-91.000.
Sabes, Jean, to Societe Anonyme dite: J. Sabes & Cie. Coupling device for a scraper conveyor tub. 4,134,489, Cl. 198-861.000.
Sado, Ichiro: *See—*
Saito, Seiji; Sado, Ichiro; and Hirano, Reiji, 4,134,536, Cl. 235-310.000.
Saint-Gobain Industries: *See—*
Auger, Robert H., 4,134,238, Cl. 52-127.000.
Kuiff, Siegfried; and Ueberwolf, Heinz, 4,135,078, Cl. 219-203.000.
Saito, Eisuke: *See—*
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, 4,134,812, Cl. 264-25.000.
Saito, Junichi: *See—*
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,134,979, Cl. 424-215.000.
Saito, Seiji; Sado, Ichiro; and Hirano, Reiji, to Canon Kabushiki Kaisha. Electronic data processing equipment. 4,134,536, Cl. 235-310.000.
Saito, Toshio: *See—*
Ogura, Toshiaki; Saito, Toshio; Higashi, Hideo; and Yamazaki, Yoshimichi, 4,135,154, Cl. 324-16.00S.
Sakai, Tetsuo; Shiraishi, Shigezo; Kimura, Choichi; Nakajimi, Maki; and Sato, Hitoshi, to Nippon Kokuyu Tetsudo; and K.K. Shibaura Seisakusho. Ballast tamping apparatus. 4,134,342, Cl. 104-12.000.
Sakamoto, Eiichi: *See—*
Sakazume, Kaiichiro; Fujimori, Noboru; Sakamoto, Eiichi; and Ishikawa, Hidehiko, 4,134,767, Cl. 96-60.00R.
Sakashita, Nobuyuki: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,134,751, Cl. 71-94.000.
Sakazume, Kaiichiro; Fujimori, Noboru; Sakamoto, Eiichi; and Ishikawa, Hidehiko, to Konishiroku Photo Industry Co., Ltd. Silver halide photosensitive material for color photography. 4,134,767, Cl. 96-60.00R.
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, to Canon Kabushiki Kaisha. Self timer of camera. 4,134,660, Cl. 354-289.000.
Sakurada, Nobuaki: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,134,654, Cl. 354-60.00R.
Sakurada, Satoshi: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; and Obayashi, Takashi, 4,134,856, Cl. 252-439.000.
Salas, Louis; and Salzman, Philip M. Lift for wheelchairs. 4,134,504, Cl. 214-77.00R.
Salensky, George A.; and Richardson, Stanley H., to Union Carbide Corporation. Glass bottle coating compositions. 4,135,014, Cl. 428-35.000.
Salzman, Philip M.: *See—*
Salas, Louis; and Salzman, Philip M., 4,134,504, Cl. 214-77.00R.
Samal, Prasanna K.; and Klar, Erhard, to SCM Corporation. Process for electrolytic iron powder. 4,134,800, Cl. 204-10.000.
Samcoe Holding Corporation: *See—*
Bryan, Clifford C., 4,134,188, Cl. 26-18.500.
San/Bar Corporation: *See—*
Bosen, Lynn R., 4,135,063, Cl. 179-99.000.
Sanada, Noriaki: *See—*
Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, 4,134,658, Cl. 354-266.000.
Sanders Associates, Inc.: *See—*
Sanders, Royden C., Jr.; Richmond, Martin R.; and Cann, Alfred J., 4,135,156, Cl. 325-4.000.
Sanders, Royden C., Jr.; Richmond, Martin R.; and Cann, Alfred J., to Sanders Associates, Inc. Satellite communications system incorporating ground relay station through which messages between terminal stations are routed. 4,135,156, Cl. 325-4.000.
Sanderson, William A.: *See—*
Swidler, Ronald; and Sanderson, William A., 4,134,722, Cl. 8-1.00A.
Sandrock, Gary D.: *See—*
Turillon, Pierre P.; and Sandrock, Gary D., 4,134,490, Cl. 206-0.700.
Turillon, Pierre P.; and Sandrock, Gary D., 4,134,491, Cl. 206-0.700.
Sanko Kagaku Co., Ltd.: *See—*
Oda, Shin-ichi; Okamoto, Tosaku; Nakanishi, Akira; and Kuroda, Takio, 4,134,847, Cl. 252-62.10P.
Sanmartin Rial, Jose S. Water standpipe for toilet sump tanks. 4,134,164, Cl. 4-353.000.
Sanner, Axel: *See—*
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.
Sansui Electric Co., Ltd.: *See—*
Kurata, Hirotaka, 4,135,164, Cl. 331-2.000.
Takahashi, Susumu, 4,135,162, Cl. 330-255.000.
Santoni, Cesar, to Greif Bros. Corporation. Drum container closing ring assembly. 4,134,609, Cl. 292-256.670.
Santore, William J.: *See—*
Barchas, Richard K.; Gelbein, Abraham P.; and Santore, William J., 4,134,910, Cl. 260-465.00H.
Saperstein, David D.: *See—*
Rein, Alan J.; Saperstein, David D.; and Pines, Seemon H., 4,134,965, Cl. 423-328.000.
Sasaki, Juntaro: *See—*
Matsuzawa, Norio; Oi, Hidesaburo; Nishimura, Hiroshi; Wada, Shigeru; and Sasaki, Juntaro, 4,135,045, Cl. 526-114.000.
Sasaki, Masaomi: *See—*
Okazaki, Mitsuo; Yamaguchi, Akihiro; Kozima, Akio; and Sasaki, Masaomi, 4,134,761, Cl. 96-1.50R.
Sasaki, Takashi; Araki, Kunio; Hagiwara, Miyuki; Ishitani, Hayao; Saito, Eisuke; and Komatsu, Kyoji, to Furukawa Electric Co., Ltd., The; and Japan Atomic Energy Research Institute. Method of manufacturing shaped articles of cross-linked poly-α-olefin composition by irradiation of electron beam. 4,134,812, Cl. 264-25.000.
Satellite Business Systems: *See—*
Schmidt, William G., 4,135,059, Cl. 179-15.0BS.
Sather, Kenneth E. Method and apparatus for providing containers with straws. 4,134,247, Cl. 53-281.000.
Sato, Hideki: *See—*
Kawawa, Takaho; Sato, Hideki; and Miyahara, Shinobu, 4,134,440, Cl. 164-4.000.
Sato, Hitoshi: *See—*
Sakai, Tetsuo; Shiraishi, Shigezo; Kimura, Choichi; Nakajimi, Maki; and Sato, Hitoshi, 4,134,342, Cl. 104-12.000.
Sato, Shoji: *See—*
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
Sato, Toshio: *See—*
Hoshimi, Susumu; and Sato, Toshio, 4,135,120, Cl. 318-138.000.
Sato, Yasushi: *See—*
Niwa, Takao; and Sato, Yasushi, 4,134,380, Cl. 123-142.50R.
Sauber, Charles J. Actuator linkage for mobile derricks and the like. 4,134,500, Cl. 212-59.00R.
Saunders, John C.: *See—*
Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,134,993, Cl. 424-331.000.
Saurer Diederichs, Societe Anonyme: *See—*
Remond, Pierre, 4,134,436, Cl. 139-453.000.
Sawa, Yuji: *See—*
Yoshikawa, Shinsuke; Sawa, Yuji; and Endo, Sigeru, 4,134,952, Cl. 264-173.000.
Sawicki, Joseph J., to Bendix Corporation, The. Coherent demodulator. 4,135,191, Cl. 343-121.000.
Scarpitti, Anthony J.: *See—*
Rye, Grover W.; Scarpitti, Anthony J.; and Kersker, Theodore M., 4,134,726, Cl. 8-139.100.
Schafer, Horst-Dieter; Loosen, Paul; Kloren, Ulrich; and Thiele, Hans-Martin, to Ringfeder GmbH. Coupling for shafts and the like. 4,134,699, Cl. 403-13.000.
Schafft, Hugo W.; and Jaanson, Ernest, to Motorola, Inc. Wire saw with rotatable guide sleeve. 4,134,384, Cl. 125-21.000.
Schalt, Wilfried: *See—*
Seeger, Arnold; and Schalt, Wilfried, 4,135,118, Cl. 318-85.000.
Schantz, Spencer C. Compact fail-safe buzzer. 4,134,698, Cl. 403-3.000.
Scharf, Friedrich: *See—*
Kehl, Albin; Muller, Hans-Georg; and Scharf, Friedrich, 4,135,155, Cl. 324-178.000.
Scheffler, Edward D., to Ag Superior, Inc. Pneumatic apparatus and process for harvesting fruit. 4,134,250, Cl. 56-328.00R.
Schell, William J., to Envirogenic Systems Company. Gas separation membranes. 4,134,742, Cl. 55-16.000.

Schenck, Hans-Uwe: *See—*
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.
Schenk, Ray: *See—*
Rader, Robert R.; and Schenk, Ray, 4,134,318, Cl. 83-91.000.
Schering AG: *See—*
Kreisel, Rudolf, 4,134,819, Cl. 204-228.000.
Schillinger, Joseph F.: *See—*
Martinez, David J.; and Schillinger, Joseph F., 4,134,531, Cl. 229-23.0BT.
Schillinger, Rainer: *See—*
Kemmner, Ulrich; Ruhl, Karl; and Schillinger, Rainer, 4,134,712, Cl. 417-423.0OR.
Schlecht, Helmut: *See—*
Distler, Harry; Hartert, Erwin; and Schlecht, Helmut, 4,134,889, Cl. 260-239.00B.
Schlick, Erich: *See—*
Schnall, Gunther; Schlick, Erich; and Blochl, Hanns, 4,134,667, Cl. 355-3.0DR.
Schloemann, Ernst F. R. A., to Raytheon Company. Magnetographic printing apparatus. 4,135,195, Cl. 346-74.100.
Schloemann-Siemag AG: *See—*
Eckardt, Helmut, 4,134,687, Cl. 366-76.000.
Schlueter, William B. Method and system for developing gas pressure to drive piston members. 4,134,265, Cl. 60-516.000.
Schmidt, Alfred C. Adjustable flow metering orifice. 4,134,572, Cl. 251-122.000.
Schmidt, Andreas, to Ciba-Geigy Corporation. Thioether-containing phenolic antioxidant stabilized polymers. 4,134,879, Cl. 260-45.85P.
Schmidt-Dunker, Manfred, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Method of treatment of calcium disorders using aminoalkane-diphosphonic acids. 4,134,969, Cl. 424-49.000.
Schmidt, Hans-Joachim: *See—*
Hecse, Dieter; Hausberg, Gerhard; Lehmann, Hans; Schmidt, Hans-Joachim; Goldschmidt, Klaus; and Than, Kyaw, 4,134,774, Cl. 106-97.000.
Schmidt, Karl-Julius; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. O-Alkyl-O-[8-chloro-quinoxal-2-yl]-thionoalkanephosphonic acid esters. 4,134,978, Cl. 424-200.000.
Schmidt, Manfred: *See—*
Dyllus, Frank-Ulrich; Kaulen, Hans; and Schmidt, Manfred, 4,134,559, Cl. 242-78.100.
Schmidt, William G., to Satellite Business Systems. Multiple channel per burst TDMA multiple transponder network. 4,135,059, Cl. 179-15.0BS.
Schmitt, Volker: *See—*
Ebel, Herbert; Goehle, Rolf; and Schmitt, Volker, 4,135,134, Cl. 335-20.000.
Schnall, Gunther; Schlick, Erich; and Blochl, Hanns, to AGFA-Gevaert AG. Drum assembly for electrostatic copier. 4,134,667, Cl. 355-3.0DR.
Schneider, Eberhard; and Vitt, Theodor, to Prameta Prazisionsmetaal -und Kunststofferzeugniss G. Baumann & Co. Hinge for door leaves which lie flush, particularly a furniture hinge. 4,134,180, Cl. 16-129.000.
Schneider, Palmer W., Jr. Apparatus for trimming meat. 4,134,181, Cl. 17-1.00R.
Schneider, Rudolf: *See—*
Pfau, Jean; Wavre, Alain; and Schneider, Rudolf, 4,135,070, Cl. 219-69.00M.
Schnicke, Mathias: *See—*
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.
Scholl, Hans; and Bernewasser, Horst, to Kochs Adler AG. Guide template for sewing machines. 4,134,210, Cl. 33-23.00H.
Schonberger, Milton. Fever thermometer, or the like sensor. 4,135,178, Cl. 338-28.000.
Schonowsky, Hubert: *See—*
Horlein, Gerhard; Schonowsky, Hubert; Bieringer, Hermann; and Langeluddeke, Peter, 4,134,753, Cl. 71-108.000.
Schrage, Klaus: *See—*
Petersen, Egon N.; and Schrage, Klaus, 4,134,925, Cl. 568-637.000.
Schubert, Joachim: *See—*
Lenzin, Fritz; and Schubert, Joachim, 4,134,193, Cl. 29-81.00L.
Schuder, Paul S. Mattress construction. 4,134,166, Cl. 5-345.00R.
Schuldt, Erich H., Jr., to Anheuser-Busch, Incorporated. Process for reducing the ribonucleic acid content or yeast protein. 4,135,000, Cl. 426-60.000.
Schumacher, Ignatius: *See—*
Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,134,877, Cl. 260-45.9NP.
Schumacher, John C.; and Lagendijk, Andre, to J C Schumacher Co. Liquid source material container and method of use for semiconductor device manufacturing. 4,134,514, Cl. 220-85.00S.
Schuster, Hubert: *See—*
Klebe, Hans; Knippschild, Gerd; and Schuster, Hubert, 4,135,010, Cl. 427-215.000.
Schwartz, Martin L.: *See—*
Zinnes, Harold; and Schwartz, Martin L., 4,134,894, Cl. 260-326.250.
Schwoegler, Edward J. Compositions of sulfur and fly ash and shaped articles produced therefrom. 4,134,775, Cl. 106-286.800.
SCM Corporation: *See—*
Hasman, John M., 4,134,905, Cl. 260-409.000.
Samal, Prasanna K.; and Klar, Erhard, 4,134,800, Cl. 204-10.000.
Scodeller, Louis, to Scofan Contractors Limited. Earth planer. 4,134,221, Cl. 37-116.000.
Scofan Contractors Limited: *See—*
Scodeller, Louis, 4,134,221, Cl. 37-116.000.
Scott, Jimmie D., to Spencer Wright Industries, Inc. Yarn feed roller assembly. 4,134,348, Cl. 112-79.00R.
Scott Paper Company: *See—*
Baker, John H., Jr., 4,134,948, Cl. 264-518.000.
Callahan, Joseph W.; and Trumbull, John G., 4,135,024, Cl. 428-171.000.
Scott, Raymond G.; and Wysocki, Lawrence S., to Champion International Corporation. Carton with integral carrying handle. 4,134,534, Cl. 229-52.00B.
Scott, Richard D., to Commercial Vehicle Parts, Inc. Portable industrial screen. 4,134,439, Cl. 160-135.000.
Scrivens, George W., to Johnson & Johnson. Surgical drape having improved retaining means. 4,134,398, Cl. 128-132.00D.
Seaman, William E.: *See—*
Pfost, Robert F.; Seaman, William E.; and Newell, Chester W., 4,135,058, Cl. 179-6.00R.
Seeger, Arnold; and Schalt, Wilfried, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. System for determining the relative angular positions of the rotors of two synchronously driven synchronous motors. 4,135,118, Cl. 318-85.000.
Segal, John A. A. A. G.: *See—*
Candlin, John P.; and Segal, John A. A. A. G., 4,134,855, Cl. 252-429.00B.
Seguin, Pierre, to Chavanoz SA. Remote control cable. 4,135,056, Cl. 174-113.00C.
Seiersen, Ole S., to Christian Rovsing A/S. Voltage control circuit for a DC-to-DC convertor. 4,135,233, Cl. 363-21.000.
Seiko Koki Kabushiki Kaisha: *See—*
Nemoto, Ichiro; Nakagawa, Tadashi; and Koyama, Mitsuo, 4,134,659, Cl. 354-267.000.
Seirmarco, James A.: *See—*
Forneris, John L.; Hicks, William W.; Keller, John H.; McKenna, Charles M.; and Seirmarco, James A., 4,135,097, Cl. 250-492.00B.
Seki, Mitsuaki: *See—*
Hanakata, Takayoshi; Noda, Atsushi; and Seki, Mitsuaki, 4,134,696, Cl. 400-323.000.
Sekiguchi, Tetsuo: *See—*
Minagawa, Motonobu; Sekiguchi, Tetsuo; and Tsuruga, Kouji, 4,134,868, Cl. 260-23.0XA.
Selman, Thomas G., to Gestetner Limited. Stencil ejector. 4,134,338, Cl. 101-122.000.
Semon, Alex. Table tennis return board. 4,134,585, Cl. 273-30.000.
Senften, David A.: *See—*
Hunter, Lee; and Senften, David A., 4,134,680, Cl. 356-121.000.
Seragnoli, Enzo, to G.D. Societa per Azioni. Apparatus for forming groups made up by a plurality of side-by-side positioned piles of parallelepipedon shaped articles. 4,134,502, Cl. 214-6.0BA.
Sertori, Jean-Claude, to Labavia S.G.E. Hydraulic control apparatuses combined with friction brakes. 4,134,266, Cl. 60-562.000.
Shafer, Donald E., to Honeywell Inc. Cathode ray tube recording apparatus. 4,135,208, Cl. 358-130.000.
Shanley, Robert L., II, to RCA Corporation. Brightness control circuit with predictable brightness control range. 4,135,200, Cl. 358-21.000.
Sharland, Stanley G.; Mecca, Angelo R.; and Masson, Robert R. Disposable drain strainer. 4,134,162, Cl. 4-292.000.
Sharma, Satish C.: *See—*
Kalafus, Edward F.; and Sharma, Satish C., 4,134,869, Cl. 260-29.300.
Sharp Kabushiki Kaisha: *See—*
Ohsaki, Mikio; Kamada, Hiroshi; Kakimoto, Kohichi; Suzuki, Hitoshi; and Hakaridani, Mitsuhiro, 4,134,674, Cl. 355-43.000.
Siozaki, Fumio, 4,135,196, Cl. 346-75.000.
Sharp, Larry L.: *See—*
McVey, John K.; Luxon, Bruce A.; and Sharp, Larry L., 4,135,176, Cl. 337-404.000.
Shea, Philip J.: *See—*
Abdallah, Abdulmuniem H.; and Shea, Philip J., 4,134,992, Cl. 424-326.000.
Shearon, Michael H.: *See—*
Borders, Raymond S., Jr.; and Shearon, Michael H., 4,135,082, Cl. 235-92.0CC.
Shell Oil Company: *See—*
Blomsma, Everhard C., 4,134,461, Cl. 175-9.000.
Pilgram, Kurt H. G.; Jackson, Earl K.; and Kollmeyer, Willy D., 4,134,752, Cl. 71-103.000.
Wakim, Jamil M., 4,134,845, Cl. 252-48.600.
Shelton, Robert Q.: *See—*
Love, Robert G.; Shelton, Robert Q.; and McCalla, Joseph B., Jr., 4,134,453, Cl. 166-298.000.
Sheng, William W.; Sun, Y. S. Edmund; and Tefft, Edward G., to General Electric Company. Selective irradiation of thyristors. 4,134,778, Cl. 148-1.500.
Sherman, John E.: *See—*
Holmquist, John R.; and Sherman, John E., 4,135,122, Cl. 318-436.000.
Sherman, Robert M., to Aerwey Laboratories, Inc. Humidifier adapter with audio relief valve. 4,134,940, Cl. 261-124.000.

Shigehara, Itaru: *See—*
Nishiyama, Ryuzo; Fujikawa, Kanichi; Nasu, Rikuo; Shigehara, Itaru; and Sakashita, Nobuyuki, 4,134,751, Cl. 71-94.000.
Shimizu, Ichiro, to Canon Kabushiki Kaisha. Motion picture camera. 4,134,648, Cl. 352-27.000.
Shimizu, Tetsuo: *See—*
Fumoto, Syozo; Shimizu, Tetsuo; and Ichiba, Shigeru, 4,134,995, Cl. 260-884.000.
Shinoda, Nobuhiko: *See—*
Murakami, Hiroyashu; Ito, Tadashi; Ito, Fumio; Sakurada, Nobuaki; Kawamura, Masaharu; and Shinoda, Nobuhiko, 4,134,654, Cl. 354-60.00R.
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, 4,134,660, Cl. 354-289.000.
Shiokawa, Kozo: *See—*
Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,134,979, Cl. 424-215.000.
Shipman, Dennis R.: *See—*
Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.
Shiraishi, Shigezo: *See—*
Sakai, Tetsuo; Shiraishi, Shigezo; Kimura, Choichi; Nakajimi, Maki; and Sato, Hitoshi, 4,134,342, Cl. 104-12.000.
Showa Highpolymer Co., Ltd.: *See—*
Takiyama, Eiichiro; Komatsu, Yasuji; and Danbara, Hiroshi, 4,134,884, Cl. 260-861.000.
Shur-Line Manufacturing Co., Inc.: *See—*
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,134,173, Cl. 15-210.00R.
Siemens Aktiengesellschaft: *See—*
Auracher, Franz; and Kersten, Ralf, 4,134,640, Cl. 350-96.150.
Buchner, Klaus, 4,135,139, Cl. 340-1.00R.
Buchner, Klaus, 4,135,140, Cl. 340-1.00R.
Gordon, Bernard M.; Neumann, Leopold; and Dobbs, John McG., 4,135,247, Cl. 364-414.000.
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.
Gussefeld, Horst; and Christoph, Heinz, 4,134,425, Cl. 137-625.300.
Kosel, Helmut, 4,135,163, Cl. 331-1.00A.
Reitner, Wilhelm, 4,134,669, Cl. 355-3.0DR.
Ruell, Hartwig, 4,135,251, Cl. 365-216.000.
Siepmann, Bernd J., 4,135,222, Cl. 361-44.000.
Siepmann, Bernd J., to Siemens Aktiengesellschaft. Fault current protection switch. 4,135,222, Cl. 361-44.000.
Siewert, Robert D.: *See—*
Peterson, Victor S.; and Siewert, Robert D., 4,134,744, Cl. 55-118.000.
Silaghi, Elmer W., to Massey-Ferguson Inc. Hinge assembly. 4,134,179, Cl. 16-128.100.
Silar, Frantisek: *See—*
Horacek, Oldrich; Silar, Frantisek; and Rychlik, Dalibor, 4,134,433, Cl. 139-383.00B.
Silvestrini, Bruno: *See—*
Baiocchi, Leandro; and Silvestrini, Bruno, 4,134,989, Cl. 424-308.000.
Simeonov, Yordan T.; and Djabarov, Nikola B., to Centralna Laboratoria Po Physiko-Chimicheska Mechanika pri Ban. Method of accelerated hardening and strength-increasing of different cements. 4,134,773, Cl. 106-89.000.
Siminuk, Paul: *See—*
Gianakakos, Spiros; Rosen, Neil H.; and Siminuk, Paul, 4,134,397, Cl. 128-90.000.
Simmons, Gerald P., to Caterpillar Tractor Co. Material handling means for use in earthworking machines. 4,134,506, Cl. 214-140.000.
Simon-Barron Limited: *See—*
Fraser, Stewart P. T.; and Fellowes-Freeman, Paul A., 4,134,552, Cl. 241-33.000.
Sinclair, James A. Oscillating power brush. 4,134,169, Cl. 15-22.00R.
Singer Company, The: *See—*
Cameron, Albert R., 4,134,421, Cl. 137-316.000.
Neilson, Scott B., 4,134,217, Cl. 35-10.200.
Siozaki, Fumio, to Sharp Kabushiki Kaisha. Grooved charging electrode in an ink jet system printer. 4,135,196, Cl. 346-75.000.
Sipremec: *See—*
Valantin, Alfred A. M., 4,134,620, Cl. 299-33.000.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, to Warner-Lambert Company. 5,6-Dihydro-4-oxo-4H-thieno[2,3-b]thiopyran-5-carboxamides, and process for the preparation thereof. 4,134,896, Cl. 260-332.20A.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, to Warner-Lambert Company. Amides of 4-hydroxy-6H-thieno[2,3-b]thiopyran-5-carboxylic acid-7,7-dioxide and process for the preparation thereof. 4,134,897, Cl. 260-332.100.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, to Warner-Lambert Company. 5,6-Dihydro-4-oxo-4H-thieno[2,3-b]thiopyran-5-carboxamides, and process for the preparation thereof. 4,134,900, Cl. 260-332.20A.
Sjolander, Carl J. O., to A-Betong Aktiebolag. Cladding. 4,134,244, Cl. 52-763.000.
Skidmore, Earl K.: *See—*
Buffington, Samuel E.; and Skidmore, Earl K., 4,134,207, Cl. 30-433.000.
Sklarz, William A.: *See—*
Graham, Glen D.; and Sklarz, William A., 4,134,214, Cl. 34-5.000.
Skogman, Harald; and Huss, Lennart, to Svenska Sockerfabriks AB. Method of purifying waste water. 4,134,830, Cl. 210-5.000.
Skraba, Walter J.: *See—*
Phillips, Benjamin; and Skraba, Walter J., 4,134,924, Cl. 568-664.000.
Sloan Valve Company: *See—*
Horowitz, Charles, 4,134,417, Cl. 137-102.000.
Sloboda, Adolph E., to American Cyanamid Company. Compositions of matter and method of use to treat arthritic disease. 4,134,990, Cl. 424-304.000.
Small, Fred; and Darbyshire, Kenneth, to Gullick Dobson Limited. Mine roof support control. 4,134,270, Cl. 405-302.000.
Smedley, Daniel G.; Hopkins, Gary L.; and Urban, John A., to Eaton Corporation. Anti-wheel lock system for tandem axles. 4,134,621, Cl. 303-96.000.
Smit, Julie A. Catheter and intestine tube and method of using the same. 4,134,405, Cl. 128-303.00R.
Smith, Charles S.: *See—*
Grotness, Gunnar; Smith, Charles S.; Morris, Robert H.; and Boyer, Peter W., 4,134,306, Cl. 74-29.000.
Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-13,14-didehydro-PG compounds. 4,134,921, Cl. 260-590.00C.
Smith International, Inc.: *See—*
Allen, James H., 4,134,463, Cl. 175-53.000.
Smith, Maurice N., to United States of America, Navy. Constant illumination control system. 4,135,116, Cl. 315-158.000.
Smith & Nephew Plastics Ltd.: *See—*
Lloyd, Ronald; Patchell, Albert G.; Murphy, William O.; and Herbert, Peter J., 4,135,023, Cl. 428-167.000.
Patchell, Albert G.; Murphy, William O.; and Lloyd, Ronald, 4,135,021, Cl. 428-134.000.
Smith & Nephew Polyfabrik Limited: *See—*
Dow, James; Lloyd, Ronald; and Patchell, Albert G., 4,134,951, Cl. 264-147.000.
Smith, Norman: *See—*
Fisher, Ronald; and Smith, Norman, 4,134,360, Cl. 118-49.100.
Smith, Norman A., to Ciba-Geigy AG. Vinylsulphone hardener. 4,134,765, Cl. 96-111.000.
Smith, Richard A., to Container Corporation of America. Device for protecting a corner of an article. 4,134,496, Cl. 206-453.000.
Smith, Samuel C. Drilling apparatus. 4,134,705, Cl. 408-112.000.
Smither, Miles A.: *See—*
Jones, John D. P.; Smither, Miles A.; and Codding, Elias H., 4,134,498, Cl. 209-564.000.
Snamprogetti, S.p.A.: *See—*
Zardi, Umberto; and Lagana', Vincenzo, 4,134,939, Cl. 261-112.000.
Snyder, Paul V., to General Electric Company. Electrical temperature sensing device. 4,135,179, Cl. 338-28.000.
Societa Farmaceutici Italia S.p.A.: *See—*
Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, 4,134,903, Cl. 260-365.000.
Societe Anonyme dite: J. Sabes & Cie: *See—*
Sabes, Jean, 4,134,489, Cl. 198-861.000.
Societe Anonyme dite: Petrole Service: *See—*
Thomas, Gilbert, 4,135,137, Cl. 335-206.000.
Societe de Prospection et d'Inventions Techniques Spit: *See—*
Termet, Pierre, 4,134,527, Cl. 227-10.000.
Societe Nationale Elf Aquitaine (Production): *See—*
Patillet, Jean; and Issenmann, Olivier, 4,134,294, Cl. 73-153.000.
Soderstrom, Sven-Erik: *See—*
Ling, Bernt; Persson, Anders; and Soderstrom, Sven-Erik, 4,134,677, Cl. 356-5.000.
Soding TV GmbH & Co., Bild & Ton International: *See—*
Weisser, Klaus, 4,134,526, Cl. 226-91.000.
Sohval, A. Robert: *See—*
Lanza, Richard C.; and Sohval, A. Robert, 4,135,091, Cl. 250-336.000.
Solid Photography Inc.: *See—*
DiMatteo, Paul; Ross, Joseph A.; and Whiteman, John P., 4,135,190, Cl. 434-105.00R.
Solid State Devices, Inc.: *See—*
Eberle, Terrence F., 4,135,145, Cl. 340-46.000.
Solum, Dallas; and Davis, Steven S., to Envirotech Corporation. Steam injection assembly for disc filter. 4,134,835, Cl. 210-178.000.
Somar Manufacturing Company Limited: *See—*
Wada, Yamato; and Ishikawa, Shin, 4,134,665, Cl. 354-299.000.
Sony Corporation: *See—*
Hoshimi, Susumu; and Sato, Toshio, 4,135,120, Cl. 318-138.000.
Suzuki, Tadao; and Wachi, Shigeaki, 4,135,237, Cl. 363-132.000.
Takahashi, Hiroo, 4,135,205, Cl. 358-127.000.
Southard, Albert A. Rotary internal combustion engine. 4,134,382, Cl. 123-243.000.
Southern Can Company: *See—*
Hansen, Harold M.; and Towns, Edward J., 4,134,523, Cl. 222-389.000.
Sowinski, Leonard A.: *See—*
McDonough, Cletus; and Sowinski, Leonard A., 4,134,201, Cl. 29-753.000.
Sparr, Anders V., Sr. Gravity feed, fountain-type car brush. 4,134,697, Cl. 401-276.000.
Spectral Dynamics Corporation: *See—*
Davis, Robert D., 4,134,303, Cl. 73-660.000.

Davis, Robert D., 4,135,244, Cl. 364-508.000.
Spectrum Conversion, Inc.: *See*—
Livermore, Anthony W.; and Noren, Daniel W., 4,134,392, Cl. 126-271.000.
Speich, Peter: *See*—
Lorenz, Kurt; Dungs, Horst; and Speich, Peter, 4,134,794, Cl. 201-27.000.
Spencer Wright Industries, Inc.: *See*—
Jolley, Paul E.; and Crumbliss, Robert T., 4,134,347, Cl. 112-79.00R.
Scott, Jimmie D., 4,134,348, Cl. 112-79.00R.
Sperry Rand Corporation: *See*—
Bell, Wayne D.; and Hansen, Earl T., 4,135,182, Cl. 358-141.000.
Spinelli, Richard A., to Xerox Corporation. High capacity photocopy optical scanning system. 4,134,670, Cl. 355-8.000.
Spitzack, Gerald L. Mounting bracket for submersible pump control box. 4,134,566, Cl. 248-309.00R.
Sprague Electric Company: *See*—
Maher, Galeb H., 4,135,224, Cl. 361-321.000.
Sprick, William L.: *See*—
Atkinson, David W.; Kuntz, Donald A.; and Sprick, William L., 4,134,561, Cl. 248-632.000.
Spurgin, Wendell P.: *See*—
Elsbernd, Carl A.; and Spurgin, Wendell P., 4,134,741, Cl. 55-13.000.
Spychalski, Robert A., to Pullman Incorporated. Railway hopper car door lock. 4,134,344, Cl. 105-248.000.
Stakupress Gesellschaft fur Stahl-und Kunststoffverarbeitung mbH & Co., KG: *See*—
Krautz, Kurt, 4,134,186, Cl. 24-230.00A.
Standard Oil Company (Indiana): *See*—
Bertolacini, Ralph J.; and Kim, Dae K., 4,134,823, Cl. 208-65.000.
Standard-Thomson Corporation: *See*—
Duprez, Wayne R.; and Briand, George J., 4,134,543, Cl. 236-48.00R.
Stange, Thomas P., to Motorola, Inc. Locked frequency divider, multiplier and phase shifter. 4,135,105, Cl. 307-225.00R.
Stanis, Eugene A.; and Philipps, Louis E., to Medelco, Incorporated. Inventory control, bed allocation and accounting data handling system. 4,135,241, Cl. 364-200.000.
Stanley, James R. Clamp. 4,134,578, Cl. 269-249.000.
Starinshak, Thomas W.: *See*—
Eckles, William E.; and Starinshak, Thomas W., 4,134,803, Cl. 204-52.00R.
Stark, Virgil; Vayda, Alexandre; and Rousset, Paul, to Stark, Virgil. Solar energy collection. 4,134,393, Cl. 126-271.000.
Starostin, Stanislav N.: *See*—
Rubashev, Grigory M.; Starostin, Stanislav N.; Pojurovsky, Vitaly E.; and Gruzova, Olga N., 4,135,126, Cl. 323-43.50S.
Statni vyzkumny ustav textilni: *See*—
Horacek, Oldrich; Silar, Frantisek; and Rychlik, Dalibor, 4,134,433, Cl. 139-383.00B.
Stauffer Chemical Company: *See*—
Gutman, Arnold D., 4,134,985, Cl. 424-272.000.
Stauner, Rudolf, to Sulzer Brothers Limited. Jacquard machine. 4,134,432, Cl. 139-59.000.
Stavenau, Harold L.; and Kaplan, Reuben W., to Truth Incorporated. Observation stand. 4,134,474, Cl. 182-187.000.
STEAG Aktiengesellschaft: *See*—
Heese, Dieter; Hausberg, Gerhard; Lehmann, Hans; Schmidt, Hans-Joachim; Goldschmidt, Klaus; and Than, Kyaw, 4,134,774, Cl. 106-97.000.
Stebles, Malcolm R. D., to Lever Brothers Company. Single phase water containing aerosol compositions. 4,134,968, Cl. 424-47.000.
Steckelberg, Willi: *See*—
Panke, Hans L.; Steckelberg, Willi; Quack, Jochen M.; and Reng, Alwin, 4,134,970, Cl. 424-70.000.
Stedefeder, Joachim: *See*—
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.
Steele Chemicals Co. Ltd.: *See*—
Kruger, Gunther, 4,134,891, Cl. 260-239.55R.
Steele, James R., to Dynamic Air Inc. Weigh jet assemblies. 4,134,466, Cl. 177-114.000.
Steidinger, Dual Gebruder: *See*—
Laufer, Helmut, 4,135,216, Cl. 360-74.000.
Stein, Gerald H.: *See*—
Adams, Calvin K.; Goldstein, Mark K.; Hall, Deborah C.; Hench, Larry L.; Madden, Michael C.; Pennypacker, Henry S., Jr.; and Stein, Gerald H., 4,134,218, Cl. 35-17.000.
Steiner, Peter; and Daman, Ernest L., to Foster Wheeler Energy Corporation. Methanation process. 4,134,908, Cl. 260-449.60M.
Steingraber, Gary C.: *See*—
Wuerker, Charles A.; Steingraber, Gary C.; and Woelffer, Neill C., 4,134,249, Cl. 56-255.000.
Steinort, Eberhart; Lazzari, Armando; and Cartoceti, Alfredo, to I.O.S. Industria Ossidi Sinterizzati S.r.l. Grinding apparatus. 4,134,553, Cl. 241-34.000.
Steinort, Eberhart: *See*—
Lazzari, Armando; Cartoceti, Alfredo; and Steinort, Eberhart, 4,134,557, Cl. 241-170.000.
Stella, Ejidio, to FMC Corporation. Packaging machine. 4,134,245, Cl. 53-547.000.
Stella KG Werner Deussen: *See*—
Deussen, Werner, 4,134,511, Cl. 215-32.000.
Stendel, Wilhelm: *See*—
Schmidt, Karl-Julius; Hoffmann, Hellmut; Hammann, Ingeborg; Homeyer, Bernhard; and Stendel, Wilhelm, 4,134,978, Cl. 424-200.000.
Stenkvist, Sven-Einar; and Widell, Bjorn, to ASEA Aktiebolag. DC arc furnace arc control. 4,135,052, Cl. 13-11.000.
Stephens, Frank M., Jr., to Hazen Research, Inc. Process for enhancing the fuel value of low BTU gas. 4,134,907, Cl. 260-449.60M.
Stevens, Myron T.: *See*—
Mirr, Gordon J., deceased; Lestan, Ivan; and Stevens, Myron T., 4,134,942, Cl. 264-26.000.
Stevens, Richard B.: *See*—
Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., 4,134,678, Cl. 356-39.000.
Stevens, Richard G., to Amerock Corporation. Adjustable roller assembly for sliding doors and the like. 4,134,178, Cl. 16-100.000.
Stevens, Robert D. Product drying apparatus. 4,134,216, Cl. 34-77.000.
Stevens, Terry K.: *See*—
Zehnder, Joseph A.; and Stevens, Terry K., 4,134,804, Cl. 204-55.00R.
Stewart, Arthur H. Axially supported boring tool. 4,134,706, Cl. 408-213.000.
Stiasny, Carl-Heinz, to Birfield Trasmissioni S.p.A. Jet pipe seal. 4,134,720, Cl. 432-209.000.
Stoakley, Diane M.; and Dombroski, John R., to Eastman Kodak Company. Allyl 2-cyanoacrylate-based orthodontic bracket adhesive. 4,134,929, Cl. 260-881.000.
Stobaus, Karl H.: *See*—
Bahre, Werner; Stobaus, Karl H.; and Ziemek, Gerhard, 4,134,528, Cl. 228-115.000.
Stock, Lester A. Cow trainer with disconnect switch. 4,134,363, Cl. 119-27.000.
Stoker, Robert J.: *See*—
Boyer, Robert C.; Martin, John A.; Raseley, LeRoy J.; and Stoker, Robert J., 4,134,450, Cl. 165-111.000.
Stone, Dennis C., to Dynascan Corporation. Circuit for testing high frequency current amplifying capability of bipolar transistors. 4,135,153, Cl. 324-158.00T.
Stoneburner, Leonard G., to Mead Corporation, The. Vibration damping means for ink jet printing device. 4,135,197, Cl. 346-75.000.
Stookey, Stanley D.: *See*—
Pierson, Joseph E.; and Stookey, Stanley D., 4,134,747, Cl. 65-30.00R.
Stout, Edward I.: *See*—
Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,134,863, Cl. 260-17.4GC.
Straughan, Clemens F., to C F S Corporation. Method for simultaneously applying to an extended cylindrical object a coating and a plastic film wrapping to retain the coating. 4,134,782, Cl. 156-79.000.
Strohmeyer, Max: *See*—
Hohenschutz, Heinz; Strohmeyer, Max; Herr, Manfred; and Kiefer, Hans, 4,134,915, Cl. 260-561.00R.
Stuchly, Stanislaw S.; Tarnawecky, Michael Z.; and Yunik, Maurice, to Manitoba Research Council. System for monitoring and measuring high voltage D.C. transmission line current. 4,135,152, Cl. 324-117.00R.
Stuhr, Hans W., to Linde Aktiengesellschaft. Variable-speed drive system with hydrostatic transmission and electric shunt motor. 4,135,121, Cl. 318-358.000.
Stuiber, Walter; and Wenderoth, Karl, to Adlerwerke vorm. Heinrich Kleyer A.G. Dual pitch tabular stop assembly. 4,134,694, Cl. 400-293.000.
Stumpp, Gerhard, to Robert Bosch GmbH. Fuel injection system. 4,134,379, Cl. 123-139.0AW.
Sturni, Lance C.: *See*—
Bosso, Joseph F.; and Sturni, Lance C., 4,134,816, Cl. 204-181.00C.
Stutsman, Richard R.: *See*—
Collins, Robert J.; Stutsman, Richard R.; and Youngkin, Theodore C., 4,134,520, Cl. 221-129.000.
Stutt, Charles A.: *See*—
Bogacki, Anthony P.; Farnsworth, Richard G.; Hardy, Samuel G.; Robinson, Paul B.; and Stutt, Charles A., 4,135,181, Cl. 340-310.00A.
Su, Yao-Sin, to Corning Glass Works. Surface treatment of zirconia ceramic. 4,135,012, Cl. 427-309.000.
Suarato, Antonino: *See*—
Masi, Paolo; Suarato, Antonino; Giardino, Pietro; Bernardi, Luigi; and Arcamone, Federico, 4,134,903, Cl. 260-365.000.
Sublistatic Holding S.A.: *See*—
Mehl, Wolfgang, 4,134,676, Cl. 355-77.000.
Sugihara, Kunihiko; Nagai, Tadashi; and Hase, Yoshifumi, to Nissan Motor Company, Limited. Exhaust gas catalytic converter system. 4,134,262, Cl. 60-289.000.
Sugiura, Hiroyuki, to Diesel Kiki Company, Ltd. Thermopneumatic actuator. 4,134,542, Cl. 236-13.000.
Sugiyama, Takahiro; Kubota, Toshifumi; and Adachi, Rensuke, to Asahi Kogaku Kogyo Kabushiki Kaisha. Miniaturized telephoto camera lens. 4,134,645, Cl. 350-216.000.
Sullo, Kenneth J., to L. E. Mason Co. Weatherproof outlet box cover. 4,134,516, Cl. 220-242.000.
Sulzer Brothers Limited: *See*—
Stauner, Rudolf, 4,134,432, Cl. 139-59.000.
Sumitomo Bakelite Company Limited: *See*—
Horie, Masayoshi; and Yamazaki, Kikuto, 4,134,688, Cl. 366-81.000.

Sun Royal Co., Ltd.: *See*—
Kazuo, Nishiyama, 4,134,167, Cl. 5-361.00R.
Sun, Y. S. Edmund: *See*—
Sheng, William W.; Sun, Y. S. Edmund; and Tefft, Edward G., 4,134,778, Cl. 148-1.500.
Sundberg, Sture, to Aktiebolaget Platmanufaktur. Packing material. 4,134,892, Cl. 206-303.000.
Sunderland, John G.: *See*—
Ellis, David; and Sunderland, John G., 4,134,820, Cl. 204-300.00R.
Suntech, Inc.: *See*—
Mayer, Robert, 4,134,423, Cl. 137-486.000.
Super Products Corporation: *See*—
Flynn, Thomas P.; and Wurster, James C., 4,134,174, Cl. 15-302.000.
Surface Systems, Inc.: *See*—
Rogers, John O.; and Gregory, Robert O., 4,135,151, Cl. 324-61.00R.
Suzuki, Hiroshi: *See*—
Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, 4,135,036, Cl. 428-413.000.
Suzuki, Hitoshi: *See*—
Ohsaki, Mikio; Kamada, Hiroshi; Kakimoto, Kohichi; Suzuki, Hitoshi; and Hakaridani, Mitsuhiro, 4,134,674, Cl. 355-43.000.
Suzuki, Masayuki: *See*—
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, 4,134,660, Cl. 354-289.000.
Suzuki, Mutsuo: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
Suzuki, Ryoichi: *See*—
Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, 4,134,658, Cl. 354-266.000.
Suzuki, Tadao; and Wachi, Shigeaki, to Sony Corporation. Inverter. 4,135,237, Cl. 363-132.000.
Suzuki, Takami; and Fukushima, Takashi, to Ricoh Co., Ltd. High speed impact printer. 4,134,692, Cl. 400-144.200.
Suzuki, Takeshi; Hirata, Hiroshi; and Kondo, Takashi, to Minolta Camera Kabushiki Kaisha. Sound motion picture camera. 4,134,649, Cl. 352-27.000.
Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, to Canon Kabushiki Kaisha. Shutter release system for a camera. 4,134,658, Cl. 354-266.000.
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, to Kowa Chemical Industry Ltd. Method of forming a decorative layer on a precast concrete board. 4,134,956, Cl. 264-256.000.
Suzuki, Yutaka: *See*—
Hobo, Nobuhito; Hasegawa, Takashi; Tsuzuki, Yoshihiko; and Suzuki, Yutaka, 4,134,258, Cl. 60-39.140.
Svenska Skandex AB: *See*—
Ahrenskou-Sorensen, Borge, 4,134,689, Cl. 366-110.000.
Svenska Sockerfabriks AB: *See*—
Skogman, Harald; and Huss, Lennart, 4,134,830, Cl. 210-5.000.
Svensson, Jan A. Apparatus for evacuating and then collecting medium samples in containers sealed by a resilient stopper at substantially atmospheric pressure. 4,134,300, Cl. 73-425.600.
Swidler, Ronald; and Sanderson, William A., to Burlington Industries, Inc. Reactive dyeing system using phosphorus acid dyes with a cyanamide compound. 4,134,722, Cl. 8-1.00A.
Synthelabo: *See*—
Wermuth, Camille G., 4,134,991, Cl. 424-309.000.
Szabo de Bucs, Eugen: *See*—
Gulden, Peter; Kozdon, Friedrich; Szabo de Bucs, Eugen; Kusebauch, Walter; Forster, Helmut; Schnicke, Mathias; Christoph, Heinz; Pfadenhauer, Berthold; and Edinger, Gerald, 4,134,739, Cl. 48-107.000.
Tafjord, Kjartan, to Telefonaktiebolaget L M Ericsson. Passive filter compensation network. 4,135,132, Cl. 333-70.00R.
Taguchi, Tetsuya: *See*—
Suzuki, Toyostosi; Uchiyama, Takashi; Sanada, Noriaki; Taguchi, Tetsuya; Suzuki, Ryoichi; and Hirohata, Michio, 4,134,658, Cl. 354-266.000.
Takagi, Tohru: *See*—
Araki, Kunio; Makuuchi, Keizo; and Takagi, Tohru, 4,134,810, Cl. 204-159.150.
Takahama, Hisataka; and Kimura, Hitoshi, to Kubota, Ltd. Apparatus for measuring weight of bulk material conveyed by belt conveyor. 4,134,465, Cl. 177-16.000.
Takahashi, Hiroo, to Sony Corporation. Skip field recorder with audio multiplexer. 4,135,205, Cl. 358-127.000.
Takahashi, Masahiro; and Yanaka, Masao, to Hitachi, Ltd. Indication input signal processing system for use in remote supervisory control apparatus. 4,135,149, Cl. 340-147.00R.
Takahashi, Susumu, to Sansui Electric Co., Ltd. Power amplifier circuits. 4,135,162, Cl. 330-255.000.
Takahashi, Takaharu: *See*—
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, 4,134,956, Cl. 264-256.000.
Takakura, Koichi: *See*—
Yamashita, Shuzo; Nagata, Shiro; and Takakura, Koichi, 4,134,837, Cl. 210-500.00M.
Takami, Akio; Kondo, Kazuo; and Tanaka, Kazutoshi, to NGK Spark Plug Co., Ltd. Seal structure of ceramics and low expansion metallic material. 4,135,038, Cl. 428-427.000.
Takasago Perfumery Co., Ltd.: *See*—
Yamanaka, Tohr; and Yagi, Misao, 4,134,919, Cl. 260-586.00P.
Takeda, Yorimasa: *See*—
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.
Takeuchi, Tatsuaki: *See*—
Hara, Atsushi; Takeuchi, Tatsuaki; and Ogata, Jun-ichi, 4,134,529, Cl. 228-175.000.
Takiyama, Eiichiro; Komatsu, Yasuji; and Danbara, Hiroshi, to Showa Highpolymer Co., Ltd. Curable resinous composition comprising unsaturated alkyd and unsaturated cycloacetal. 4,134,884, Cl. 260-861.000.
Talbot, Robert E.: *See*—
McCrudden, Joseph E.; and Talbot, Robert E., 4,134,850, Cl. 252-186.000.
Tallent, Othar K.: *See*—
Vondra, Benedict L.; Tallent, Othar K.; and Mailen, James C., 4,134,960, Cl. 423-7.000.
Tally Corporation: *See*—
Bringhurst, Edward D., 4,134,336, Cl. 101-93.040.
Tamai, Yasuo: *See*—
Nakamura, Matsuaki; Kitamoto, Tatsuji; Tamai, Yasuo; and Kurokawa, Koshu, 4,135,218, Cl. 360-127.000.
Ogawa, Hiroshi; Nakamura, Matsuaki; Aonuma, Masashi; and Tamai, Yasuo, 4,135,016, Cl. 428-64.000.
Tamura, Koichi: *See*—
Yamaji, Kenkichi; Dietrich, Oelhschlagel; Abe, Hajime; and Tamura, Koichi, 4,134,196, Cl. 29-420.000.
Tanaami, Kazuo: *See*—
Kamm, Gerard R.; and Tanaami, Kazuo, 4,134,824, Cl. 208-92.000.
Tanaka, Akira: *See*—
Yoshida, Akio; Tanaka, Akira; and Tsubai, Yasuo, 4,134,769, Cl. 96-76.00R.
Tanaka, Hideki: *See*—
Tokushima, Takashige; and Tanaka, Hideki, 4,134,376, Cl. 123-119.00A.
Tanaka, Kazutoshi: *See*—
Takami, Akio; Kondo, Kazuo; and Tanaka, Kazutoshi, 4,135,038, Cl. 428-427.000.
Tanaka, Mizuho: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.
Tani, Yoshio: *See*—
Iwahashi, Toshio; Nakai, Kouji; and Tani, Yoshio, 4,134,370, Cl. 123-41.310.
Tapia, Graciano J., to Alcudia Empresa Para la Industria Quimica, S.A. Polyolefin film for agricultural use. 4,134,875, Cl. 260-42.460.
Tarnawecky, Michael Z.: *See*—
Stuchly, Stanislaw S.; Tarnawecky, Michael Z.; and Yunik, Maurice, 4,135,152, Cl. 324-117.00R.
Taylor, Donald F., to Otis Engineering Corporation. Multi-stage sliding valve fluid operated and pressure balanced. 4,134,454, Cl. 166-320.000.
Taylor, John B.; and Harrison, Derek R., to Roussel Uclaf. 1,2-Dihydro-6-phenyl-1H,4H-imidazobenzodiazepin-1-ones. 4,134,976, Cl. 424-267.000.
TDK Electronics Co., Ltd.: *See*—
Yoshizawa, Keiichi; and Nakao, Isamu, 4,135,219, Cl. 360-128.000.
Tefft, Edward G.: *See*—
Sheng, William W.; Sun, Y. S. Edmund; and Tefft, Edward G., 4,134,778, Cl. 148-1.500.
Teijin Cordley Ltd.: *See*—
Mimura, Masahisa, 4,135,011, Cl. 427-246.000.
Tektronix, Inc.: *See*—
Dickie, Douglas P.; and Nelson, Larry A., 4,135,201, Cl. 358-40.000.
Gagliani, Laurence O., 4,135,160, Cl. 328-58.000.
Telefonaktiebolaget L M Ericsson: *See*—
Lindberg, Fritz J.; and Nilsson, Uno S., 4,134,632, Cl. 339-17.0LC.
Tafjord, Kjartan, 4,135,132, Cl. 333-70.00R.
Teletype Corporation: *See*—
Randolph, John E., 4,134,695, Cl. 400-320.000.
Tenco Brooke Bond, Ltd.: *See*—
Edmonds, Christopher J.; and Gudnason, Geir V., 4,135,001, Cl. 426-250.000.
Tennessee Valley Authority: *See*—
Norton, Melvin M.; and Parker, Byron R., 4,134,750, Cl. 71-29.000.
Terada, Osamu; and Uwajima, Takayuki, to Kyowa Hakko Kogyo Co., Ltd. Creatinine desimidase in the quantitative determination of creatinine. 4,134,793, Cl. 195-103.50R.
Termet, Pierre, to Societe de Prospection et d'Inventions Techniques Spit. Powder charge operated apparatus. 4,134,527, Cl. 227-10.000.
Texaco Development Corp.: *See*—
Milligan, John G., 4,134,854, Cl. 252-351.000.
Moss, Philip H.; and Nieh, Edward C. Y., 4,134,916, Cl. 260-561.00N.
Texaco Inc.: *See*—
Flournoy, Kenoth H.; Alston, Robert B.; and Braden, William B., Jr., 4,134,415, Cl. 137-13.000.

Marion, Charles P.; Kaufman, Harold C.; Beall, James F.; Brady, John M.; Dach, Michael M.; Gulko, George M.; and Shipman, Dennis R., 4,134,740, Cl. 48-197.00R.

Textron Inc.: *See—*
Balke, Rodney W.; Oradat, Frank R.; and Haga, Cecil W., 4,134,309, Cl. 74-573.00F.
Warburton, Geoffrey; and Parker, Roland, 4,134,353, Cl. 112-265.000.

Than, Kyaw: *See—*
Heese, Dieter; Hausberg, Gerhard; Lehmann, Hans; Schmidt, Hans-Joachim; Goldschmidt, Klaus; and Than, Kyaw, 4,134,774, Cl. 106-97.000.

Thermo King Corporation: *See—*
Erickson, Donald E.; and Volk, Rodney H., 4,134,275, Cl. 62-244.000.

Thiele, Hans-Martin: *See—*
Schafer, Horst-Dieter; Loosen, Paul; Kloren, Ulrich; and Thiele, Hans-Martin, 4,134,699, Cl. 403-13.000.

Thoma, Richard: *See—*
Kast, Bernd; Stedefeder, Joachim; Sanner, Axel; Schenck, Hans-Uwe; Thoma, Richard; and Fischer, Hermann, 4,135,043, Cl. 526-63.000.

Thomas, Gilbert, to Societe Anonyme dite: Petrole Service. Magnetic position detectors. 4,135,137, Cl. 335-206.000.

Thomas, H. P., Jr.: *See—*
Elmore, John E., 4,134,268, Cl. 405-43.000.

Thomason, Harry E.; and Thomason, Harry J. L., Jr. Solar heating system. 4,134,544, Cl. 237-1.00A.

Thomason, Harry J. L., Jr.: *See—*
Thomason, Harry E.; and Thomason, Harry J. L., Jr., 4,134,544, Cl. 237-1.00A.

Thompson, Dewey T.; Parkins, John H.; and Nichols, James B., to Milliken Research Corporation. Process for dyeing highly moisture absorbent cellulose containing textile materials. 4,134,724, Cl. 8-54.200.

Thompson, John H.: *See—*
Gingerich, Larry T.; Thompson, John H.; and Whittaker, Robert H., 4,135,109, Cl. 310-369.000.

Thomson-CSF: *See—*
Baril, Michel; and Legendre, Jacques, 4,135,170, Cl. 333-26.000.
Tournois, Pierre; and Maerfeld, Charles, 4,134,623, Cl. 310-313.000.

Thorn Electrical Industries Limited: *See—*
Chalmers, Alan G.; Whittaker, Frank L.; and Wharmby, David O., 4,135,110, Cl. 313-225.000.

Thornton, Roy F., to General Electric Company. Solid ion-conductive electrolyte body and method of forming. 4,135,040, Cl. 429-191.000.

Thorsteinson, Erlind M.: *See—*
Kurtz, Abraham N.; Thorsteinson, Erlind M.; and Decker, Harry J., 4,134,859, Cl. 252-456.000.

Throne, Darwin H.: *See—*
Peregrino, Luiz; and Throne, Darwin H., 4,135,243, Cl. 364-484.000.

Thunes, Odd, to A/S Akers Mek. Verksted. Arrangement of platform deck for oil rigs or the like. 4,134,702, Cl. 405-195.000.

Timtner, Karlheinz: *See—*
Maurer, Ruprecht; and Timtner, Karlheinz, 4,134,372, Cl. 123-90.280.

Tiskus, John R.: *See—*
Readal, Gerald J.; Tiskus, John R.; and Tomcanin, William J., 4,135,006, Cl. 427-10.000.

Toa Nenryo Kogyo Kabushiki Kaisha: *See—*
Itoh, Takuji; Sakurada, Satoshi; Okano, Shohei; and Obayashi, Takashi, 4,134,856, Cl. 252-439.000.

Togashi, Hidetoshi: *See—*
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.

Tokushima, Takashige; and Tanaka, Hideki, to Toyo Kogyo Co., Ltd. Exhaust gas recycling system. 4,134,376, Cl. 123-119.00A.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Tsuneta, Asahide; Ohta, Yasuo; Ikegaki, Makoto; and Ito, Takeo, 4,135,113, Cl. 313-470.000.

Tolle, Gunter: *See—*
Bolldorf, Kurt; Hager, Walter; and Tolle, Gunter, 4,134,346, Cl. 112-70.000.

Tolman, Richard L.: *See—*
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Tomcanin, William J.: *See—*
Readal, Gerald J.; Tiskus, John R.; and Tomcanin, William J., 4,135,006, Cl. 427-10.000.

Tominaga, Akira, to Kansai Paint Company, Limited. Process for making aqueous cationic coating from amine-epoxy adduct, polyamide, and semiblocked polyisocyanate, acid salt, and product. 4,134,865, Cl. 260-18.0PN.

Tominaga, Akira; and Hirata, Yasuyuki, to Kansai Paint Company, Limited. Aqueous cationic coating from amine-epoxy adduct, polyamide, and semi-blocked polyisocyanate, acid salt. 4,134,866, Cl. 260-18.0PN.

Tomlinson, Jerry G.: *See—*
Lefebvre, Arthur H.; Reider, Samuel B.; and Tomlinson, Jerry G., 4,134,260, Cl. 60-261.000.

Tommasini, Raffaele: *See—*
Melloni, Piero; Mongelli, Nicola; Lauria, Francesco; Rossi, Alessandro; and Tommasini, Raffaele, 4,134,974, Cl. 424-248.540.

Tomoshige, Toru; Nagano, Riichiro; and Imamura, Tetsuo, to Mitsui Petrochemical Industries, Ltd. Production of thermoplastic olefin elastomers. 4,134,927, Cl. 260-878.00R.

Topfl, Rosemarie, to Ciba-Geigy Corporation. Finishing of leather with reaction products of epoxides and fatty acids. 4,134,867, Cl. 260-21.000.

Toray Industries Inc.: *See—*
Otaki, Yukio; Oka, Ken-ichiro; Koide, Kazuyoshi; and Nakagawa, Kiyoshi, 4,134,252, Cl. 57-284.000.

Tornstrom, Eric, to Mobil Tyco Solar Energy Corporation. Solar energy concentrator. 4,134,387, Cl. 126-270.000.

Torrieri, Don J. Method and means for pulse detection. 4,135,161, Cl. 328-108.000.

'totes', Incorporated: *See—*
Briggs, Robert E., 4,134,198, Cl. 29-450.000.

Toth, Leslie: *See—*
Jarvis, Wilbur W.; and Toth, Leslie, 4,134,414, Cl. 134-144.000.

Tournois, Pierre; and Maerfeld, Charles, to Thomson-CSF. System for processing an electric signal using elastic surface waves. 4,134,623, Cl. 310-313.000.

Towns, Edward J.: *See—*
Hansen, Harold M.; and Towns, Edward J., 4,134,523, Cl. 222-389.000.

Toyo Kogyo Co., Ltd.: *See—*
Tokushima, Takashige; and Tanaka, Hideki, 4,134,376, Cl. 123-119.00A.

Toyobo Co., Ltd.: *See—*
Yoshimura, Shohei; and Isaka, Tutomu, 4,134,957, Cl. 264-288.000.

Toyomoto, Isao: *See—*
Suzuki, Yoshinori; Asayama, Akihiko; Dohi, Fumio; Takahashi, Takaharu; and Toyomoto, Isao, 4,134,956, Cl. 264-256.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kawai, Yukio; and Adachi, Masaharu, 4,134,596, Cl. 277-152.000.
Matsumoto, Noboru; Nakashima, Mikio; Kokubo, Humihiro; Nakamura, Yukio; and Adachi, Yoshiaki, 4,134,263, Cl. 60-293.000.
Niwa, Takao; and Sato, Yasushi, 4,134,380, Cl. 123-142.50R.
Okano, Hiroshi; and Akai, Wataru, 4,134,308, Cl. 74-411.000.
Okano, Hiroshi; and Iwatsuki, Masayuki, 4,134,446, Cl. 165-9.000.
Yamanaka, Teruo; and Hori, Osamu, 4,135,066, Cl. 200-19.00R.

Traini, Carlo: *See—*
De Nora, Oronzio; and Traini, Carlo, 4,134,806, Cl. 204-105.00R.

Trainor, John B. Combination muffler and air filter. 4,134,472, Cl. 181-258.000.

Trane Company, The: *See—*
Johnsen, Clifford N., 4,134,274, Cl. 62-179.000.

Transaction Technology, Inc.: *See—*
Glaser, Paul F.; and Orford, Richard J., 4,134,537, Cl. 235-379.000.

Trawinski, Helmut F., to Amberger Kaolinwerke GmbH. System and method for the fractionation of suspended solids by means of hydrocyclones. 4,134,828, Cl. 209-211.000.

Troitsky, Vladimir A.: *See—*
Gupalo, Jury D.; Nagaitsev, Vladimir A.; Troitsky, Vladimir A.; Bely, Nikolai G.; Parshin, Dmitry N.; and Zhinzhikov, Pavel A., 4,135,123, Cl. 323-56.000.

Troue, Harden H., to Union Carbide Corporation. Method and apparatus for curing coating materials. 4,135,098, Cl. 250-492.00R.

Trumbull, John G.: *See—*
Callahan, Joseph W.; and Trumbull, John G., 4,135,024, Cl. 428-171.000.

Truth Incorporated: *See—*
Stavenau, Harold L.; and Kaplan, Reuben W., 4,134,474, Cl. 182-187.000.

TRW, Inc.: *See—*
Allen, Reginald A., 4,135,104, Cl. 307-221.00D.
Matay, Istvan M., 4,134,302, Cl. 73-612.000.

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Polyak, David G.; Lebedev, Evgeny I.; Esenovsky-Lashkov, Jury K.; Pyatko, Boris N.; and Mosyagin, Vladimir M., 4,134,482, Cl. 192-91.00R.

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Yoshida, Akio; Tanaka, Akira; and Tsubai, Yasuo, 4,134,769, Cl. 96-76.00R.

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Kishino, Shigeo; Saito, Junichi; Kudamatsu, Akio; Shiokawa, Kozo; and Tsuboi, Shinichi, 4,134,979, Cl. 424-215.000.

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Hobo, Nobuhito; Hasegawa, Takashi; Tsuzuki, Yoshihiko; and Suzuki, Yutaka, 4,134,258, Cl. 60-39.140.

Tu, Shu T.: *See—*
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Tune, Shearer E. Tilting service lift for automotive equipment with folding lift unit. 4,134,501, Cl. 214-1.00A.

Tunekawa, Tokuichi: *See—*
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Davis, Ralph A., 4,134,469, Cl. 180-65.0DD.
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Brownlee, Robert R.; and Tyers, Frank O., 4,134,408, Cl. 128-419.0PS.
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De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,811, Cl. 204-159.150.
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,814, Cl. 204-159.150.
Uchida, Keiichi: *See—*
Oda, Yoshio; Uchida, Keiichi; and Morikawa, Shinsuke, 4,134,796, Cl. 203-63.000.
Uchiyama, Takashi: *See—*
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Udert, Karl-Ernst; and Entner, Josef, to HILTI Aktiengesellschaft. Holder for self-drilling dowels. 4,134,597, Cl. 279-103.000.
Udipi, Kishore; and Hsieh, Henry L., to Phillips Petroleum Company. Adhesives and laminates. 4,135,037, Cl. 428-414.000.
Ueberwolf, Heinz: *See—*
Kuiff, Siegfried; and Ueberwolf, Heinz, 4,135,078, Cl. 219-203.000.
Ueda, Shoji: *See—*
Nagai, Nobuyuki; Moriguchi, Yasuo; Itoh, Yoshimasa; Ueda, Shoji; Takeda, Yorimasa; and Hiromoto, Akira, 4,134,758, Cl. 75-175.500.
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Minorikawa, Hitoshi; Hohsho, Yukio; and Ueno, Sadayasu, 4,135,186, Cl. 340-622.000.
Ulin, Carl-Otto, to U.S. Philips Corporation. Tape drive sensor. 4,135,084, Cl. 250-231.00R.
Unigate, Limited: *See—*
Jenkins, Jonathan M., 4,135,039, Cl. 429-27.000.
Union Carbide Corporation: *See—*
Kamm, Gerard R.; and Tanaami, Kazuo, 4,134,824, Cl. 208-92.000.
Kurtz, Abraham N.; Thorsteinson, Erlind M.; and Decker, Harry J., 4,134,859, Cl. 252-456.000.
Park, Kisoon; and Lowery, Robert H., 4,134,841, Cl. 252-8.900.
Phillips, Benjamin; and Skraba, Walter J., 4,134,924, Cl. 568-664.000.
Salensky, George A.; and Richardson, Stanley H., 4,135,014, Cl. 428-35.000.
Troue, Harden H., 4,135,098, Cl. 250-492.00R.
Uniroyal, Inc.: *See—*
Hunter, Byron A., 4,135,049, Cl. 560-13.000.
United Air Specialists, Inc.: *See—*
Elsbernd, Carl A.; and Spurgin, Wendell P., 4,134,741, Cl. 55-13.000.
United Aniline Co.: *See—*
Redpath, Donald J., 4,134,359, Cl. 116-219.000.
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Agriculture: *See—*
Fanta, George F.; Stout, Edward I.; and Doane, William M., 4,134,863, Cl. 260-17.4GC.
Air Force: *See—*
McLaughlin, James F.; and Nelson, Theodore M., 4,135,169, Cl. 333-13.000.
Rotman, Walter; Poirier, J. Leon; Karas, Nicholas V.; Franchi, Peter R.; and Fante, Ronald L., 4,135,185, Cl. 340-552.000.
Army: *See—*
Elmer, Frank J., 4,134,681, Cl. 356-152.000.
Ferry, William R.; and Voss, James R., 4,134,367, Cl. 123-32.0EA.
Kubanoff, Jacob H., 4,135,159, Cl. 325-476.000.
Larsen, Lawrence E.; and Jacobi, John H., 4,135,131, Cl. 324-58.50A.
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Bauerle, James E., 4,134,290, Cl. 73-40.50R.
Kim, Jinchoon, 4,135,093, Cl. 250-423.00R.
Pollono, Louis P., 4,134,563, Cl. 248-58.000.
Vondra, Benedict L.; Tallent, Othar K.; and Mailen, James C., 4,134,960, Cl. 423-7.000.
Wheatley, Seth J., 4,134,571, Cl. 251-86.000.
Wootton, Roy E., 4,135,130, Cl. 324-54.000.
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Humphrey, Marshall F. Process for purification of waste water produced by a Kraft process pulp and paper mill. 4,134,786, Cl. 162-14.000.
Jennings, Donald E.; and Hillman, John J. Thermal compensator for closed-cycle helium refrigerator. 4,134,447, Cl. 165-30.000.
Khanna, Shyam M.; and Urban, Eugene W. Direct current transformer. 4,135,127, Cl. 323-44.00F.
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Goetz, Alexander F. H.; and Landauer, Frederick P., Jr., 4,134,683, Cl. 356-407.000.
Kourtides, Demetrius A.; and Parker, John A., 4,135,019, Cl. 428-117.000.
Peterson, Victor S.; and Siewert, Robert D., 4,134,744, Cl. 55-118.000.
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Adicoff, Arnold; Martin, Eugene C.; and Yee, Rena Y., 4,134,848, Cl. 252-63.200.
Beck, Earl J., 4,134,426, Cl. 137-625.230.
Percy, Joseph L.; and Duykers, Ludwig R., 4,135,142, Cl. 340-8.00R.
Rebuck, Neal D.; and Conte, Alfeo A., Jr., 4,134,843, Cl. 252-28.000.
Robertson, Douglas G., 4,134,155, Cl. 2-412.000.
Smith, Maurice N., 4,135,116, Cl. 315-158.000.
U.S. Philips Corporation: *See—*
Ferrieu, Gilbert M. M., 4,135,062, Cl. 179-84.00R.
Greve, Peter F.; and Opheij, Willem G., 4,135,207, Cl. 358-128.000.
Hofer, Franz; and van der Hoorn, Gustaaf H. A., 4,134,801, Cl. 204-15.000.
Kamerbeek, Evert M. H.; and Lakerveld, Herman G., 4,135,107, Cl. 310-179.000.
Kersten, Reinhard; and Kuhl, Egbert, 4,134,388, Cl. 126-270.000.
Kleuters, Wilhelm J.; van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,135,206, Cl. 358-128.000.
Limper, Nicolaas H.; and Lohuis, Willem J., 4,135,210, Cl. 358-217.000.
Mahdjuri, Faramarz; Horster, Horst; and Kersten, Reinhard, 4,134,391, Cl. 126-271.000.
Nicot, Jean, 4,135,065, Cl. 200-11.0DA.
Ulin, Carl-Otto, 4,135,084, Cl. 250-231.00R.
Van Alem, Antonius A. M.; Boonstra, Lieuwe; Dekker, Francois D.; and Van de Veerdonk, Johannes T. A., 4,135,083, Cl. 250-201.000.
Verweel, Jan, 4,135,111, Cl. 313-403.000.
United States Steel Corporation: *See—*
Readal, Gerald J.; Tiskus, John R.; and Tomcanin, William J., 4,135,006, Cl. 427-10.000.
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Basche, Malcolm, deceased, 4,135,030, Cl. 428-304.000.
Gardner, William B.; and Kniat, John, 4,134,259, Cl. 60-241.000.
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Cannon, Joseph G.; Long, John P.; and Diana, John N., 4,134,997, Cl. 424-330.000.
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Wood, Ralph E.; Wiser, Wendell H.; Anderson, Larry L.; and Oblad, Alex G., 4,134,822, Cl. 208-10.000.
Unkelbach, Karl-Heinz: *See—*
Bender, Hans; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,134,829, Cl. 209-223.00R.
UOP Inc.: *See—*
Winter, George R., III, 4,134,734, Cl. 422-224.000.
Upjohn Company, The: *See—*
Rizzo, Victor L., 4,134,913, Cl. 260-543.00H.
Smith, Herman W., 4,134,921, Cl. 260-590.00C.
Walker, Jerry A., 4,135,051, Cl. 560-105.000.
Upton, Charles J.: *See—*
Crutchfield, Marvin M.; and Upton, Charles J., 4,134,902, Cl. 260-340.600.
Urban, Eugene W.: *See—*
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Urban, John A.: *See—*
Smedley, Daniel G.; Hopkins, Gary L.; and Urban, John A., 4,134,621, Cl. 303-96.000.
Urisaka, Yukihiro. Land skis. 4,134,598, Cl. 280-11.220.
Usami, Katsuhisa: *See—*
Ishikawa, Isao; Itoh, Michiyasu; and Usami, Katsuhisa, 4,135,088, Cl. 250-307.000.
Ushijima, Makoto, to Hitachi Metals, Ltd. Permanent magnet alloys. 4,134,756, Cl. 75-122.000.
Usui International Industry, Ltd.: *See—*
Mukasa, Masayoshi; and Fujimaki, Shigeaki, 4,134,430, Cl. 138-109.000.
Utumi, Masahiro: *See—*
Akashi, Goro; Fujiyama, Masaaki; and Utumi, Masahiro, 4,135,031, Cl. 428-323.000.
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Terada, Osamu; and Uwajima, Takayuki, 4,134,793, Cl. 195-103.50R.
Valantin, Alfred A. M., to Sipremec. Channelling machine for cutting a preliminary groove around the working face of a tunnel. 4,134,620, Cl. 299-33.000.
Valenta, Zdenek. 14β-Hydroxyandrostanes. 4,134,920, Cl. 260-586.00E.
Valjukas, Juozas B.; Babyanskas, Marionas A.; Zayanchkauskas, Pyatras A.; and Zhukauskene, Yanina I. Anti-antihemocytic serum and a method for the preparation thereof. 4,134,885, Cl. 260-112.00B.
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Van Alem, Antonius A. M.; Boonstra, Lieuwe; Dekker, Francois D.; and Van de Veerdonk, Johannes T. A., to U.S. Philips Corporation. Optical scanning device. 4,135,083, Cl. 250-201.000.

Vanassche, Frits: *See—*
Nijs, Marc; Vanassche, Frits; and De Kok, Johannes A., 4,134,197, Cl. 29-458.000.

van den Ouweland, Godefridus A. M.; and Peer, Henricus G., to Lever Brothers Company. Flavoring substances. 4,134,901, Cl. 260-332.30R.

van der Hoorn, Gustaaf H. A.: *See—*
Hofer, Franz; and van der Hoorn, Gustaaf H. A., 4,134,801, Cl. 204-15.000.

Vanderlinde, William: *See—*
Morgan, Albert W.; Schumacher, Ignatius; and Vanderlinde, William, 4,134,877, Cl. 260-45.9NP.

van der Male, Dirk B.: *See—*
Bamsey, Robert G.; and van der Male, Dirk B., 4,134,377, Cl. 123-119.00A.

Van de Veerdonk, Johannes T. A.: *See—*
Van Alem, Antonius A. M.; Boonstra, Lieuwe; Dekker, Francois D.; and Van de Veerdonk, Johannes T. A., 4,135,083, Cl. 250-201.000.

VanDeWoestine, Robert V.: *See—*
Bonin, George E.; Lentz, William P.; VanDeWoestine, Robert V.; Dockerty, Stuart M., deceased; and Dockerty, Robert C., executor, 4,135,018, Cl. 428-116.000.

van Rosmalen, Gerard E.: *See—*
Kleuters, Wilhelm J.; van Rosmalen, Gerard E.; Bierhoff, Martinus P. M.; and Immink, Kornelis A., 4,135,206, Cl. 358-128.000.

Vapor Corporation: *See—*
Daugirdas, Kristupas; and Elguindy, Samir, 4,134,231, Cl. 49-139.000.

Varian Techtron Proprietary Limited: *See—*
Egan, Edward G.; Jackson, Ian S.; and Bennett, Peter, 4,134,685, Cl. 356-312.000.

Varta Batterie Aktiengesellschaft: *See—*
Jung, Margarete; Voss, Ernst; and Chobanov, Tsvetko, 4,135,041, Cl. 429-225.000.

Vasconcelos, Fernando M.: *See—*
Brown, Leslie J.; DeGironimo, Bruno; Mountain, Charles F.; Stevens, Richard B.; and Vasconcelos, Fernando M., 4,134,678, Cl. 356-39.000.

VAW-Leichtmetall GmbH: *See—*
Dyllus, Frank-Ulrich; Kaulen, Hans; and Schmidt, Manfred, 4,134,559, Cl. 242-78.100.

Vayda, Alexandre: *See—*
Stark, Virgil; Vayda, Alexandre; and Rousset, Paul, 4,134,393, Cl. 126-271.000.

Velie, Wallace W. Multi-flame fuel burner for liquid and gaseous fuels. 4,134,719, Cl. 431-171.000.

Veragen, Rene, to Commissariat a l'Energie Atomique. Device for supporting or guiding a rolling load. 4,134,487, Cl. 198-782.000.

Vereinigte Edelstahlwerke Aktiengesellschaft: *See—*
Machner, Peter, 4,134,443, Cl. 164-52.000.

Verweel, Jan, to U.S. Philips Corporation. Shadow mask having magnetic quadrupoles around each mask aperture. 4,135,111, Cl. 313-403.000.

Vickers-Intertek Limited: *See—*
Ball, Kenneth, 4,134,456, Cl. 166-356.000.

Vilms, Juri. Speech reflector. 4,134,219, Cl. 35-35.00C.

Violet, Jon A., to J. B. Foote Foundry Co., The. Cement mixer with switch harness. 4,135,171, Cl. 366-60.000.

Violet, Jon A.: *See—*
Hauser, Hans; and Violet, Jon A., 4,134,686, Cl. 366-47.000.

Vitner, Joseph. Flow splitter. 4,134,427, Cl. 137-876.000.

Vitols, Visvaldis A.: *See—*
Riganati, John P.; and Vitols, Visvaldis A., 4,135,147, Cl. 340-146.30E.

Vitt, Theodor: *See—*
Schneider, Eberhard; and Vitt, Theodor, 4,134,180, Cl. 16-129.000.

Vitzthum, Otto: *See—*
Barthels, Manfred; Werkhoff, Peter; and Vitzthum, Otto, 4,134,535, Cl. 229-62.500.

Vloedman, Theodoris H. A., to N.K.F. Kabel B.V. High voltage cable fitting with a sealing member. 4,135,054, Cl. 174-19.000.

Volin, Timothy E., to International Nickel Company, Inc., The. Process for preparing mixed metal oxide catalysts. 4,134,852, Cl. 252-472.000.

Volk, Rodney H.: *See—*
Erickson, Donald E.; and Volk, Rodney H., 4,134,275, Cl. 62-244.000.

Volker, Herbert M.; Oser, Polat; Doring, Gerhard; and Koch, Harald, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Apparatus for treatment of exhaust gases. 4,134,733, Cl. 422-177.000.

Vollkommer, Norbert: *See—*
Blumenfeld, Georg; and Vollkommer, Norbert, 4,134,934, Cl. 260-869.000.

Von Arx AG Maschinenfabrik: *See—*
Lenzin, Fritz; and Schubert, Joachim, 4,134,193, Cl. 29-81.00L.

Vondra, Benedict L.; Tallent, Othar K.; and Mailen, James C., to United States of America, Energy. Method for dissolving plutonium oxide with HI and separating plutonium. 4,134,960, Cl. 423-7.000.

Voorhees, Donna S. Throw-away ear protector. 4,134,153, Cl. 2-174.000.

Voorhees, Stanley V.: *See—*
Baldwin, Floyd G.; and Voorhees, Stanley V., 4,134,345, Cl. 105-366.00B.

Vorwerk & Co. Interholding GmbH: *See—*
Guhne, Wieland; and Lienenluke, Paul, 4,134,605, Cl. 285-7.000.

Voss, Ernst: *See—*
Jung, Margarete; Voss, Ernst; and Chobanov, Tsvetko, 4,135,041, Cl. 429-225.000.

Voss, James R.: *See—*
Ferry, William R.; and Voss, James R., 4,134,367, Cl. 123-32.0EA.

Vota, Terry L.: *See—*
Goel, Rajeshwar P.; Vota, Terry L.; and Lynch, Thomas J., 4,134,317, Cl. 83-35.000.

Vrancken, August: *See—*
De Poortere, Michel; Colpaert, Marc; Dufour, Paul; and Vrancken, August, 4,134,811, Cl. 204-159.150.
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Malasek, Jaromir; Kuda, Vladimir; and Pozar, Vojmir, 4,134,434, Cl. 139-429.000.

W. F. Hall Printing Company: *See—*
Duzinskas, Donald R.; and Chomenko, Anthony, 4,134,580, Cl. 271-6.000.

W. Hegenscheidt Gesellschaft mit beschraenkter Haftung: *See—*
Luzina, Max, 4,134,314, Cl. 82-1.00C.

W. R. Grace & Co.: *See—*
Morgan, Charles R., 4,135,047, Cl. 544-219.000.

Wachi, Shigeaki: *See—*
Suzuki, Tadao; and Wachi, Shigeaki, 4,135,237, Cl. 363-132.000.

Wada, Hajime: *See—*
Kikuchi, Shoji; Wada, Hajime; Endo, Takaya; Deguchi, Hidetaka; Komaita, Toshiki; and Ishikawa, Wataru, 4,134,766, Cl. 96-55.000.

Wada, Shigeru: *See—*
Matsuzawa, Norio; Oi, Hidesaburo; Nishimura, Hiroshi; Wada, Shigeru; and Sasaki, Juntaro, 4,135,045, Cl. 526-114.000.

Wada, Yamato; and Ishikawa, Shin, to Somar Manufacturing Company Limited. Single bath-type film developing device. 4,134,665, Cl. 354-299.000.

Wade, Paul C., to Microwave Semiconductor Corporation. Reverse channel GaAsFET oscillator. 4,135,168, Cl. 331-108.00R.

Wagner Electric Corporation: *See—*
DuBois, Richard, 4,135,117, Cl. 340-758.000.
Woodcock, Glenn, 4,134,418, Cl. 137-116.500.

Wagner, Kuno: *See—*
Quiring, Bernd; Wagner, Kuno; and Konig, Joachim, 4,134,935, Cl. 260-859.00R.

Wakim, Jamil M., to Shell Oil Company. Sulphurized material and a lubricant composition. 4,134,845, Cl. 252-48.600.

Walker, Brooks. Two volume flush valve. 4,134,570, Cl. 251-40.000.

Walker, Jerry A., to Upjohn Company, The. Process for preparing arylalkanoic acid derivatives. 4,135,051, Cl. 560-105.000.

Wallace, Joseph W.: *See—*
Cvacho, Daniel S.; Haufler, Edwin R.; Wallace, Joseph W.; and Woolard, James M., 4,134,354, Cl. 113-120.00H.

Walter Grafton & Son Limited: *See—*
Crickmore, John D.; and Radford, Ernest R., 4,134,693, Cl. 400-208.000.

Walton, Robert J., to Energy Block Ltd. Insulated building block. 4,134,241, Cl. 52-275.000.

Warburton, Geoffrey; and Parker, Roland, to Textron Inc. Sliding clasp fastener and method of producing the same. 4,134,353, Cl. 112-265.000.

Ward, William P.; and Gillow, George B., to NCR Corporation. Method and processor having bit-addressable scratch pad memory. 4,135,242, Cl. 364-200.000.

Warner-Lambert Company: *See—*
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,896, Cl. 260-332.20A.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,897, Cl. 260-332.100.
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Wise, Lawrence D.; Flynn, Patrick F.; and Morrison, Glenn C., 4,134,982, Cl. 424-263.000.
Zinnes, Harold; and Schwartz, Martin L., 4,134,894, Cl. 260-326.250.

Warner-Lehman Corporation: *See—*
Lehman, James A., 4,134,229, Cl. 46-228.000.

Warren, William H., to Henningsen Foods, Inc. Method and means for transferring rows of articles. 4,134,333, Cl. 99-498.000.

Washington Nu Process, Inc.: *See—*
Mohwinkel, Franz, 4,135,003, Cl. 426-412.000.

Watanabe, Eiji, to Nihon Denshi Kabushiki Kaisha. Apparatus for obtaining an X-ray image. 4,135,095, Cl. 250-445.00T.

Watanabe, Makoto, to Kubota, Ltd. Work vehicle with a fluid pressure circuit system. 4,134,505, Cl. 214-138.00F.

Wavre, Alain: *See—*
Pfau, Jean; Wavre, Alain; and Schneider, Rudolf, 4,135,070, Cl. 219-69.00M.

Weber, Christian A.: *See—*
Byrne, Joseph B.; and Weber, Christian A., 4,134,936, Cl. 260-860.000.

Weber, Donald R., to Dacom, Inc. Method and apparatus for compressing facsimile transmission data. 4,135,214, Cl. 358-261.000.

Webster, William W.: *See—*
Allen, Wallace B.; Harrell, John W.; and Webster, William W., 4,134,799, Cl. 204-1.00T.

Wedel, Wedigo V.: *See—*
Beckers, Richard; Wedel, Wedigo V.; and Monheimius, Manfred, 4,135,055, Cl. 174-48.000.

Weickenmeier, Kurt K., to Koppers Company, Inc. Method and apparatus for stacking blanks. 4,134,330, Cl. 93-93.00M.

Weigele, Reinhold; and Moser, Kurt, to Muller, Rolf Erich. Duplicating apparatus. 4,134,341, Cl. 101-142.000.

Weil, Sanford A.: *See—*
Macriss, Robert A.; Rush, William F.; and Weil, Sanford A., 4,134,743, Cl. 55-34.000.

Weiner, Herman S.: *See—*
Jacobsen, Fred W.; Jakubowski, Stanley T.; and Weiner, Herman S., 4,134,195, Cl. 29-157.30R.

Weisser, Klaus, to Soding TV GmbH & Co., Bild & Ton International. Film strip joint for continuous projection. 4,134,526, Cl. 226-91.000.

Welch, Kenneth L., to Rogers, Virgil W.; and Glover, Max H., part interest to each. Collapsible bait trap. 4,134,225, Cl. 43-100.000.

Wella Aktiengesellschaft: *See—*
Gross, Paul; Konrad, Eugen; and Mager, Herbert, 4,134,412, Cl. 132-7.000.

Wells, Peter M., Jr., to Ideal Industries, Inc. Portable electric heat gun. 4,135,080, Cl. 219-370.000.

Welsh, James W.; and Harris, Dwight L. Pivotal structural enclosure. 4,135,225, Cl. 361-382.000.

Wenderoth, Karl: *See—*
Stuiber, Walter; and Wenderoth, Karl, 4,134,694, Cl. 400-293.000.

Wennerberg, Gunnar: *See—*
Typpo, Pekka M.; Wennerberg, Gunnar; and Larsen, Tor G., 4,134,211, Cl. 33-147.00L.

Wenz, Friedrich: *See—*
Honlinger, Herwig; and Wenz, Friedrich, 4,134,292, Cl. 73-146.000.

Werkhoff, Peter: *See—*
Barthels, Manfred; Werkhoff, Peter; and Vitzthum, Otto, 4,134,535, Cl. 229-62.500.

Wermuth, Camille G., to Synthelabo. Derivatives of 2-(3-phenyl-2-aminopropionyloxy)-acetic acid. 4,134,991, Cl. 424-309.000.

Wertheimer, Alan L., to Leeds & Northrup Company. Determining the volume and the volume distribution of suspended small particles. 4,134,679, Cl. 356-336.000.

Weseloh, William E.: *See—*
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,310, Cl. 74-687.000.
Orshansky, Elias, Jr., deceased; and Weseloh, William E., 4,134,311, Cl. 74-687.000.

Westbrook, Bobby J. Apparatus for recirculating heated air. 4,134,545, Cl. 237-53.000.

Western Electric Company, Incorporated: *See—*
Dembiak, Matthew R.; and Newton, Wayne McC., 4,134,953, Cl. 264-174.000.
Lavigna, Robert J.; Pearce, Charles W.; and Reusser, Raymond E., 4,134,785, Cl. 156-601.000.

Westinghouse Electric Corp.: *See—*
Bluzer, Nathan, 4,135,248, Cl. 364-575.000.
Fiedor, Richard J.; and Hanes, Maurice H., 4,135,099, Cl. 250-551.000.
Gingerich, Larry T.; Thompson, John H.; and Whittaker, Robert H., 4,135,109, Cl. 310-369.000.
Goel, Rajeshwar P.; Vota, Terry L.; and Lynch, Thomas J., 4,134,317, Cl. 83-35.000.
Grimes, Jerry W., 4,135,172, Cl. 336-197.000.
John, Clarence D., Jr., 4,134,716, Cl. 425-186.000.
Maier, Alfred E.; and Ricci, Louis N., 4,135,072, Cl. 200-308.000.
Mendelsohn, Morris A.; and Izzo, Carl P., 4,134,883, Cl. 528-63.000.
Pebler, Alfred R.; and Beckett, Donald W., 4,134,818, Cl. 204-195.00S.
Zolnerovich, Walter, Jr.; and Leang, William N. C., 4,134,476, Cl. 187-29.00R.

Westkamper, Michael J.: *See—*
Davis, Ray E., Jr.; Becker, Richard J.; Foster, Robert G.; and Westkamper, Michael J., 4,135,204, Cl. 358-101.000.

Weyerhaeuser Company: *See—*
Holmquist, John R.; and Sherman, John E., 4,135,122, Cl. 318-436.000.

Wharmby, David O.: *See—*
Chalmers, Alan G.; Whittaker, Frank L.; and Wharmby, David O., 4,135,110, Cl. 313-225.000.

Wheatley, Seth J., to United States of America, Energy. Double-disc gate valve. 4,134,571, Cl. 251-86.000.

Whirlpool Corporation: *See—*
Jarvis, Wilbur W.; and Toth, Leslie, 4,134,414, Cl. 134-144.000.
Platt, Clark I.; and Clearman, Jack F., 4,134,277, Cl. 68-53.000.

White, John R., to Goodyear Tire & Rubber Company, The. Aftermixer and apparatus. 4,135,180, Cl. 366-336.000.

Whitehall Corporation: *See—*
Caldwell, Stephen A.; and Massey, Randall R., 4,135,141, Cl. 340-7.0PC.

Whiteman, John P.: *See—*
DiMatteo, Paul; Ross, Joseph A.; and Whiteman, John P., 4,135,190, Cl. 434-105.00R.

Whitney, Richard R.: *See—*
Hayes, Dwight R., Jr.; and Whitney, Richard R., 4,134,931, Cl. 260-897.00B.

Whittaker, Frank L.: *See—*
Chalmers, Alan G.; Whittaker, Frank L.; and Wharmby, David O., 4,135,110, Cl. 313-225.000.

Whittaker, Robert H.: *See—*
Gingerich, Larry T.; Thompson, John H.; and Whittaker, Robert H., 4,135,109, Cl. 310-369.000.

Widell, Bjorn: *See—*
Stenkvist, Sven-Einar; and Widell, Bjorn, 4,135,052, Cl. 13-11.000.

Widmaier, Manfred: *See—*
Kruger, Gunter; Kuttner, Klaus; Widmaier, Manfred; and Leinauer, Erich, 4,134,808, Cl. 204-129.200.

Wikel, James H.: *See—*
Paget, Charles J.; and Wikel, James H., 4,134,914, Cl. 260-552.0SC.

Williams, Clarence B., Jr. Portable colostomy kit. 4,134,404, Cl. 128-283.000.

Williams, George N.: *See—*
Fisher, Mahlon B.; Gallaro, Anthony V.; and Williams, George N., 4,135,112, Cl. 313-470.000.

Williams, Robert R.: *See—*
Rowley, William N.; Ehret, Gordon F.; and Williams, Robert R., 4,134,836, Cl. 210-232.000.

Williamson, William R. N.: *See—*
Evans, Delme; Saunders, John C.; and Williamson, William R. N., 4,134,993, Cl. 424-331.000.

Wills, Kendall S. Laser bread browning apparatus. 4,135,077, Cl. 219-121.00L.

Wilson, James E.: *See—*
Conant, Louis A.; Bolton, Wilbur M.; and Wilson, James E., 4,134,451, Cl. 165-133.000.

Wilson, Michael T. Torque absorber for artificial limbs. 4,134,159, Cl. 3-2.000.

Wimmer, Dieter: *See—*
Heckel, Claus; Wimmer, Dieter; and Knabe, Frank, 4,135,060, Cl. 179-15.0BY.

Winter, George R., III, to UOP Inc. Detergent alkylation reactor. 4,134,734, Cl. 422-224.000.

Wintfeld, Leonard; and Nagel, Robert H., to IDR, Inc. Row grabbing video display terminal having local programmable control thereof. 4,135,213, Cl. 358-142.000.

Wirtz Manufacturing Company, Inc.: *See—*
Rader, Robert R.; and Schenk, Ray, 4,134,318, Cl. 83-91.000.

Wise, Lawrence D.; Flynn, Patrick F.; and Morrison, Glenn C., to Warner-Lambert Company. Antipsychotic 1-[4,4-Bis(4-fluorophenyl) butyl]-4-phenoxy-1,2,3,6-tetrahydropyridines. 4,134,982, Cl. 424-263.000.

Wiser, Wendell H.: *See—*
Wood, Ralph E.; Wiser, Wendell H.; Anderson, Larry L.; and Oblad, Alex G., 4,134,822, Cl. 208-10.000.

Witworth, Otis R., to Menasha Corporation. Drainage blade having a raised, smoothly rounded bearing surface. 4,134,788, Cl. 162-352.000.

Woelffer, Neill C.: *See—*
Wuerker, Charles A.; Steingraber, Gary C.; and Woelffer, Neill C., 4,134,249, Cl. 56-255.000.

Woessner, Neal L.: *See—*
Piercy, Richard J.; and Woessner, Neal L., 4,134,507, Cl. 214-145.00R.

Wolf-Gerate GmbH: *See—*
Joswig, Siegfried, 4,134,499, Cl. 211-66.000.

Wong, Woon-Tong. Combination straw and stirrer. 4,134,494, Cl. 206-216.000.

Wood, Edward H., to Celotex Corporation. Weather strip and balance assembly for nonremovable windows. 4,134,234, Cl. 49-429.000.

Wood, Frederick J., Jr.: *See—*
Cupp, Charles D.; Matthies, Bruce J.; and Wood, Frederick J., Jr., 4,134,173, Cl. 15-210.00R.

Wood, Peter J.: *See—*
Pugsley, Peter C.; and Wood, Peter J., 4,135,212, Cl. 358-256.000.

Wood, Ralph E.; Wiser, Wendell H.; Anderson, Larry L.; and Oblad, Alex G., to University of Utah. Process for minimizing vaporizable catalyst requirements for coal hydrogenation-liquefaction. 4,134,822, Cl. 208-10.000.

Wood, Robert A.: *See—*
Petterborg, Emil M.; and Wood, Robert A., 4,134,646, Cl. 350-289.000.

Woodcock, Glenn, to Wagner Electric Corporation. Manual fluid pressure controller. 4,134,418, Cl. 137-116.500.

Woodhall, Edwin S.: *See—*
Appleby, Paul E.; Christie, Christopher E.; Gerstenmaier, John H.; Minter, Thomas F.; and Woodhall, Edwin S., 4,134,783, Cl. 156-396.000.

Woolard, James M.: *See—*
Cvacho, Daniel S.; Haufler, Edwin R.; Wallace, Joseph W.; and Woolard, James M., 4,134,354, Cl. 113-120.00H.

Wootton, Roy E., to United States of America, Energy. Method of testing gas insulated systems for the presence of conducting particles utilizing a gas mixture of nitrogen and sulfur hexafluoride. 4,135,130, Cl. 324-54.000.

Worcester Controls (U.K.) Limited: *See—*
Melville, John G. E., 4,134,595, Cl. 277-9.000.

Workens, Frank M., to Falconer Plate Glass Corporation. Method of silvering mirrors. 4,135,008, Cl. 427-168.000.

World Color Press, Inc.: *See—*
Polarek, Kenneth J.; and Newsome, John R., 4,134,579, Cl. 270-52.000.

Woron, Robert P., to Allen Organ Company. Demultiplexing audio waveshape generator. 4,134,321, Cl. 84-1.220.

Wuerker, Charles A.; Steingraber, Gary C.; and Woelffer, Neill C., to Jacobsen Manufacturing Company. Mulching type of lawn mower. 4,134,249, Cl. 56-255.000.

Wurster, James C.: *See*—
Flynn, Thomas P.; and Wurster, James C., 4,134,174, Cl. 15-302.000.

Wylain, Inc.: *See*—
Rowley, William N.; Ehret, Gordon F.; and Williams, Robert R., 4,134,836, Cl. 210-232.000.

Wyman, Donald P.: *See*—
Lorenz, Donald H.; Tu, Shu T.; and Wyman, Donald P., 4,135,007, Cl. 427-44.000.

Wyse, Harold G.: *See*—
Kelley, John R.; and Wyse, Harold G., 4,135,177, Cl. 337-407.000.

Wysocki, Lawrence S.: *See*—
Scott, Raymond G.; and Wysocki, Lawrence S., 4,134,534, Cl. 229-52.00B.

Xerox Corporation: *See*—
Fisher, Donald J., 4,134,673, Cl. 355-15.000.
Frey, Thomas M., 4,135,194, Cl. 346-74.100.
Gibson, Harry W.; Bailey, Frank C.; and Mincer, Joseph L., 4,134,760, Cl. 96-1.0SD.
Jacques, James O.; and Halfhill, Martin O., 4,135,217, Cl. 360-77.000.
Leonard, William H., 4,134,671, Cl. 355-8.000.
Spinelli, Richard A., 4,134,670, Cl. 355-8.000.

Yabuta, Kenji: *See*—
Emoto, Kazuhiro; Yabuta, Kenji; Yamashita, Kiyoshi; and Futaki, Kiyoshi, 4,134,770, Cl. 96-100.00R.

Yagi, Misao: *See*—
Yamanaka, Tohr; and Yagi, Misao, 4,134,919, Cl. 260-586.00P.

Yajima, Seishi; Hayashi, Josaburo; Omori, Mamoru; and Kayano, Hideo, to Research Institute for Iron, Steel and Other Metals of the Tohoku University, The. Light metal matrix composite materials reinforced with silicon carbide fibers. 4,134,759, Cl. 75-204.000.

Yale, Harry L.; and Petigara, Ramesh B., to E. R. Squibb & Sons, Inc. Stimulating the central nervous system. 4,134,975, Cl. 424-263.000.

Yamada, Yasuyuki: *See*—
Akashi, Goro; Fujiyama, Masaaki; and Yamada, Yasuyuki, 4,135,032, Cl. 428-328.000.
Mukaida, Yoshito; Yamada, Yasuyuki; Hirayama, Shinichi; Suzuki, Hiroshi; and Asakawa, Yutaka, 4,135,036, Cl. 428-413.000.

Yamaguchi, Akihiro: *See*—
Okazaki, Mitsuo; Yamaguchi, Akihiro; Kozima, Akio; and Sasaki, Masaomi, 4,134,761, Cl. 96-1.50R.

Yamaguchi, Kineo; and Kawakami, Katsuhiko, to Nippon Mining Co., Ltd. Method for the prevention of stress corrosion cracking. 4,135,013, Cl. 427-405.000.

Yamaguchi, Yukio: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.

Yamaji, Kenkichi; Dietrich, Oelhschlagel; Abe, Hajime; and Tamura, Koichi, to Hitachi Cable Ltd. Method of production of a wire-shaped composite addition material. 4,134,196, Cl. 29-420.000.

Yamamichi, Masayoshi: *See*—
Sakurada, Nobuaki; Ito, Tadashi; Murakami, Hiroyasu; Yamamichi, Masayoshi; Suzuki, Masayuki; and Shinoda, Nobuhiko, 4,134,660, Cl. 354-289.000.

Yamamoto, Joshiji: *See*—
Ohmori, Hisashi; Ohnishi, Masayuki; and Yamamoto, Joshiji, 4,134,441, Cl. 164-4.000.

Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, to Hitachi, Ltd. Method for construction of water intake portion of hydraulic machine. 4,134,530, Cl. 228-182.000.

Yamamoto, Tadayoshi. Air pressure transducer of diffusion type. 4,134,304, Cl. 73-755.000.

Yamanaka, Teruo; and Hori, Osamu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Distributor for internal combustion engine containing apparatus for suppressing noise. 4,135,066, Cl. 200-19.00R.

Yamanaka, Tohr; and Yagi, Misao, to Takasago Perfumery Co., Ltd. Process for producing menthone. 4,134,919, Cl. 260-586.00P.

Yamashita, Kiyoshi: *See*—
Emoto, Kazuhiro; Yabuta, Kenji; Yamashita, Kiyoshi; and Futaki, Kiyoshi, 4,134,770, Cl. 96-100.00R.

Yamashita, Shuzo; Nagata, Shiro; and Takakura, Koichi, to Kuraray Co., Ltd. Ethylene-vinyl alcohol copolymer membranes having improved permeability characteristics and a method for producing the same. 4,134,837, Cl. 210-500.00M.

Yamazaki, Ikue. Acidic two-bath type composition for permanent waving of hair and for treatment of hair and scalp. 4,134,411, Cl. 132-7.000.

Yamazaki, Kikuto: *See*—
Horie, Masayoshi; and Yamazaki, Kikuto, 4,134,688, Cl. 366-81.000.

Yamazaki, Yoshimichi: *See*—
Ogura, Toshiaki; Saito, Toshio; Higashi, Hideo; and Yamazaki, Yoshimichi, 4,135,154, Cl. 324-16.00S.

Yanagida, Isao: *See*—
Yamamoto, Kagehiko; Ito, Hideo; Tanaka, Mizuho; Sato, Shoji; Togashi, Hidetoshi; Yanagida, Isao; Yamaguchi, Yukio; Suzuki, Mutsuo; Oguri, Tadakazu; Kita, Hisanao; and Komatsu, Junzo, 4,134,530, Cl. 228-182.000.

Yanaka, Masao: *See*—
Takahashi, Masahiro; and Yanaka, Masao, 4,135,149, Cl. 340-147.00R.

Yang, Ralph T., to Aluminum Company of America. Process for producing high-purity coal. 4,134,737, Cl. 44-1.00R.

Yasukura, Tohru, to Casio Computer Co., Ltd. Electronic timepiece device. 4,134,254, Cl. 58-85.500.

Yee, Rena Y.: *See*—
Adicoff, Arnold; Martin, Eugene C.; and Yee, Rena Y., 4,134,848, Cl. 252-63.200.

Yonan, Peter K., to G. D. Searle & Co. 2-Aryl-2-[ω-(diisopropylamino)alkyl]-ω-(azabicycloalkyl)alkanamides. 4,134,890, Cl. 260-239.0BA.

Yoshida, Akio; Tanaka, Akira; and Tsubai, Yasuo, to Mitsubishi Paper Mills, Ltd. Offset printing plate. 4,134,769, Cl. 96-76.00R.

Yoshida, Hiroshi: *See*—
Miyata, Katsuharu; Hirai, Yutaka; and Yoshida, Hiroshi, 4,134,880, Cl. 560-24.000.

Yoshikawa, Shinsuke; Sawa, Yuji; and Endo, Sigeru, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method and die for forming laminated tubular structures of synthetic resins. 4,134,952, Cl. 264-173.000.

Yoshimura, Shohei; and Isaka, Tutomu, to Toyobo Co., Ltd. Method of stretching polypropylene films. 4,134,957, Cl. 264-288.000.

Yoshino, Takeshi, to Fuji Photo Optical Co., Ltd. Means for transmitting information from lens barrel to camera body. 4,134,656, Cl. 354-163.000.

Yoshino, Tetsuo: *See*—
Nago, Kazuyoshi; Mitsuhashi, Sadayuki; and Yoshino, Tetsuo, 4,135,136, Cl. 335-112.000.

Yoshizawa, Keiichi; and Nakao, Isamu, to TDK Electronics Co., Ltd. Demagnetizer for a magnetic head of a recording-reproducing device. 4,135,219, Cl. 360-128.000.

Young, Glenn S.; and Laudel, Arthur, Jr., to Power Monitors, Inc. Method and apparatus for controlling loads in electric power systems by reduction of peak loads. 4,135,101, Cl. 307-39.000.

Youngkin, Theodore C.: *See*—
Collins, Robert J.; Stutsman, Richard R.; and Youngkin, Theodore C., 4,134,520, Cl. 221-129.000.

Yu, Chia-Nien, to Morton-Norwich Products, Inc. Compound 2[5-(4-chlorophenyl)-2-furanyl]-5-mercapto-1,3,4-oxadiazole potassium salt is useful as an antifungal agent. 4,134,893, Cl. 260-307.00G.

Yunik, Maurice: *See*—
Stuchly, Stanislaw S.; Tarnawecky, Michael Z.; and Yunik, Maurice, 4,135,152, Cl. 324-117.00R.

Yuzuriha, Hiroaki: *See*—
Handa, Kiyoyasu; and Yuzuriha, Hiroaki, 4,134,253, Cl. 57-96.000.

Zabel, Wolf: *See*—
Bender, Hans; Unkelbach, Karl-Heinz; and Zabel, Wolf, 4,134,829, Cl. 209-223.00R.

Zacharie, Guy: *See*—
Le Huede, Georges; and Zacharie, Guy, 4,134,287, Cl. 72-370.000.

Zachmeyer, James W.: *See*—
Badberg, Melvin C.; Hutchins, Thomas G.; Olsen, Roy W.; and Zachmeyer, James W., 4,134,784, Cl. 156-423.000.

Zahid, Abduz, to Greer Hydraulics, Inc. Hydraulic accumulator having an improved oil port seal. 4,134,429, Cl. 138-30.000.

Zaluska, Philip J.: *See*—
Bechara, Ibrahim S.; Zaluska, Philip J.; and Mascioli, Rocco L., 4,134,994, Cl. 260-501.110.

Zamkow, Stanley F.: *See*—
Hamill, Samuel M., III; Kilbane, James C.; and Zamkow, Stanley F., 4,135,239, Cl. 364-107.000.

Zardi, Umberto; and Lagana', Vincenzo, to Snamprogetti, S.p.A. Liquid distributor for thin-film, tube-bundle apparatus. 4,134,939, Cl. 261-112.000.

Zasloff, Howard B.: *See*—
Tsao, Utah; and Zasloff, Howard B., 4,134,926, Cl. 260-682.000.

Zayanchkauskas, Pyatras A.: *See*—
Valjukas, Juozas B.; Babyanskas, Marionas A.; Zayanchkauskas, Pyatras A.; and Zhukauskene, Yanina I., 4,134,885, Cl. 260-112.00B.
Valjukas, Juozas B.; Babyanskas, Marionas A.; and Zayanchkauskas, Pyatras A., 4,134,886, Cl. 260-112.00B.

Zehnder, Joseph A.; and Stevens, Terry K., to Enthone, Incorporated. Cyanide-free zinc plating bath and process. 4,134,804, Cl. 204-55.00R.

Zeller, Hans: *See*—
Latsch, Reinhard; Bianchi, Valerio; and Zeller, Hans, 4,134,374, Cl. 123-117.00D.

Zeller, Paul: *See*—
Hromatka, Otto; Binder, Dieter; Pfister, Rudolf; and Zeller, Paul, 4,134,898, Cl. 260-332.20C.

Zeman, David G. Emitter for drip irrigation. 4,134,551, Cl. 239-542.000.

Zenith Radio Corporation: *See*—
Rogers, Melvin F., 4,135,211, Cl. 358-246.000.

Zeyra, Abraham; and Gunzler, Thomas. Two-way relief and control valves. 4,134,424, Cl. 137-493.000.

Zhinzhikov, Pavel A.: *See*—
Gupalo, Jury D.; Nagaitsev, Vladimir A.; Troitsky, Vladimir A.; Bely, Nikolai G.; Parshin, Dmitry N.; and Zhinzhikov, Pavel A., 4,135,123, Cl. 323-56.000.

Zhukauskene, Yanina I.: *See*—
Valjukas, Juozas B.; Babyanskas, Marionas A.; Zayanchkauskas, Pyatras A.; and Zhukauskene, Yanina I., 4,134,885, Cl. 260-112.00B.

Ziemek, Gerhard: *See*—
Bahre, Werner; Stobaus, Karl H.; and Ziemek, Gerhard, 4,134,528, Cl. 228-115.000.

Zinnes, Harold; and Schwartz, Martin L., to Warner-Lambert Company. Pyrrolo[1,2-a]indole compounds. 4,134,894, Cl. 260-326.250.

Zinnes, Harold: *See*—
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,896, Cl. 260-332.20A.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,897, Cl. 260-332.100.
Sircar, Jagadish C.; Kesten, Stephen J.; and Zinnes, Harold, 4,134,900, Cl. 260-332.20A.

Zolnerovich, Walter, Jr.; and Leang, William N. C., to Westinghouse Electric Corp. Elevator system. 4,134,476, Cl. 187-29.00R.

Zoor, Reinhold, to Heinrich Wunder KG. Safety ski binding. 4,134,603, Cl. 280-614.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 16TH DAY OF JANUARY, 1979

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

C. I. Hayes Inc.: *See*—
Westeren, Herbert W.; Scotto, Vincent; Gronquist, Ernest C., Jr.; and Taft, Donald A., Re. 29,881, Cl. 148-16.500.

Cosan Chemical Corporation: *See*—
Luloff, Jerome S.; and Eilender, Albert L., Re. 29,883, Cl. 544-186.000.

Cranston, Benjamin H.; Hornig, Carl F.; and Machusak, Donald A., to Western Electric Company, Inc. Method of forming a laminate. Re. 29,879, Cl. 228-107.000.

Dembiak, Matthew R.; and Glosek, John J., to Western Electric Company, Inc. Methods of and apparatus for controlling the thickness of an annular extrusion. Re. 29,886, Cl. 364-469.000.

Dietz, Wolfgang F. W., to RCA Corporation. Horizontal deflection system with boosted B plus. Re. 29,885, Cl. 315-408.000.

Duff, Ian D., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the. Apparatus for use in investigating specimens. Re. 29,880, Cl. 422-64.000.

Eilender, Albert L.: *See*—
Luloff, Jerome S.; and Eilender, Albert L., Re. 29,883, Cl. 544-186.000.

Gassman, Paul G., to Ohio State University Research Foundation. Synthesis of oxindoles from anilines and intermediates therein. Re. 29,882, Cl. 260-325.00R.

Glosek, John J.: *See*—
Dembiak, Matthew R.; and Glosek, John J., Re. 29,886, Cl. 364-469.000.

Gronquist, Ernest C., Jr.: *See*—
Westeren, Herbert W.; Scotto, Vincent; Gronquist, Ernest C., Jr.; and Taft, Donald A., Re. 29,881, Cl. 148-16.500.

Hornig, Carl F.: *See*—
Cranston, Benjamin H.; Hornig, Carl F.; and Machusak, Donald A., Re. 29,879, Cl. 228-107.000.

Komine, Shigeharu; Tanaka, Yoshiaki; and Kuzuya, Shiro, to Oki Electric Industry Company, Ltd. Key telephone system for subscribers. Re. 29,884, Cl. 179-2.0DP.

Kuzuya, Shiro: *See*—
Komine, Shigeharu; Tanaka, Yoshiaki; and Kuzuya, Shiro, Re. 29,884, Cl. 179-2.0DP.

Luloff, Jerome S.; and Eilender, Albert L., to Cosan Chemical Corporation. Antibacterial product. Re. 29,883, Cl. 544-186.000.

Machusak, Donald A.: *See*—
Cranston, Benjamin H.; Hornig, Carl F.; and Machusak, Donald A., Re. 29,879, Cl. 228-107.000.

Ohio State University Research Foundation: *See*—
Gassman, Paul G., Re. 29,882, Cl. 260-325.00R.

Oki Electric Industry Company, Ltd.: *See*—
Komine, Shigeharu; Tanaka, Yoshiaki; and Kuzuya, Shiro, Re. 29,884, Cl. 179-2.0DP.

RCA Corporation: *See*—
Dietz, Wolfgang F. W., Re. 29,885, Cl. 315-408.000.

Scotto, Vincent: *See*—
Westeren, Herbert W.; Scotto, Vincent; Gronquist, Ernest C., Jr.; and Taft, Donald A., Re. 29,881, Cl. 148-16.500.

Taft, Donald A.: *See*—
Westeren, Herbert W.; Scotto, Vincent; Gronquist, Ernest C., Jr.; and Taft, Donald A., Re. 29,881, Cl. 148-16.500.

Tanaka, Yoshiaki: *See*—
Komine, Shigeharu; Tanaka, Yoshiaki; and Kuzuya, Shiro, Re. 29,884, Cl. 179-2.0DP.

United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Social Services in Her Britannic Majesty's Government of the: *See*—
Duff, Ian D., Re. 29,880, Cl. 422-64.000.

Westeren, Herbert W.; Scotto, Vincent; Gronquist, Ernest C., Jr.; and Taft, Donald A., to C. I. Hayes Inc. Method of vacuum carburizing. Re. 29,881, Cl. 148-16.500.

Western Electric Company, Inc.: *See*—
Cranston, Benjamin H.; Hornig, Carl F.; and Machusak, Donald A., Re. 29,879, Cl. 228-107.000.
Dembiak, Matthew R.; and Glosek, John J., Re. 29,886, Cl. 364-469.000.

LIST OF PLANT PATENTEES

Moore, Ralph S. Miniature rose plant. 4,365, 1-16-79, Cl. 7.000.

Moore, Ralph S. Rose plant. 4,366, 1-16-79, Cl. 7.000.

Moore, Ralph S. Rose plant. 4,368, 1-16-79, Cl. 10.000.

Steward, T. Linwood, Jr. American holly—Steward's Silver Crown variety. 4,367, 1-16-79, Cl. 65.000.

LIST OF DESIGN PATENTEES

Associated Mills, Inc.: *See*—
Grube, Clifford E., 250,835, Cl. D24-64.000.

Atlantic Service Company, Inc.: *See*—
Bowers, George T., 250,824, Cl. D22-14.000.

Baltimore Spice Company, The: *See*—
Stern, David L., 250,810, Cl. D10-46.000.

Bergen, Sheldon L.; and Botten, Dale R. Display stand. 250,801, 1-16-79, Cl. D6-172.000.

Botten, Dale R.: *See*—
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Bowers, George T., to Atlantic Service Company, Inc. Knife scabbard. 250,824, 1-16-79, Cl. D22-14.000.

Bridwell, James M.: *See*—
Loftis, James W.; and Bridwell, James M., 250,833, Cl. D23-97.000.

Cartier International B.V.: *See*—
Perrin, Alain D., 250,809, Cl. D10-39.000.

Chambers, Richard F. Asphalt plant control house. 250,838, 1-16-79, Cl. D25-22.000.

Chambers, Richard F. Asphalt plant control house. 250,839, 1-16-79, Cl. D25-22.000.

Chamers, Richard F. Asphalt plant control house. 250,840, 1-16-79, Cl. D25-22.000.

Childre, Lewis, to Lew Childre & Sons, Inc. Worm hook. 250,825, 1-16-79, Cl. D22-30.000.

China Seas, Inc.: *See*—
Elliott, Inger M.; and Uglow, Helena, 250,802, Cl. D7-97.000.
Elliott, Inger M.; and Uglow, Helena, 250,803, Cl. D7-97.000.

Chipner, Russell W.; Schindler, Donald R.; and Shelko, Peter L., to General Electric Company. Photoflash lamp unit. 250,816, 1-16-79, Cl. D16-42.000.

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Chipner, Russell W.; Schindler, Donald R.; and Shelko, Peter L., to General Electric Company. Photoflash lamp unit. 250,821, 1-16-79, Cl. D16-42.000.

Church's Fried Chicken, Inc.: *See*—
Fraley, D. Pat., 250,842, Cl. D25-25.000.

Clement, Philippe J. H. Bathtub. 250,827, 1-16-79, Cl. D23-55.000.

Clement, Philippe J. H. Bathtub. 250,828, 1-16-79, Cl. D23-55.000.

Clement, Philippe J. H. Bathtub. 250,829, 1-16-79, Cl. D23-55.000.

Clement, Philippe J. H. Bathtub. 250,830, 1-16-79, Cl. D23-55.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 250,851, Cl. D34-15.0AJ.

Dartnall, Jack. Vehicle pedal control unit. 250,814, 1-16-79, Cl. D12-174.000.

DeFever, Michael D. Ski boot attachment. 250,796, 1-16-79, Cl. D2-314.000.

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McIlvain, Howard H., 250,807, Cl. D9-239.000.

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Osborne, Paul F., Jr., 250,850, Cl. D34-5.00L.

Duncan, Eathel L., to Goodyear Tire & Rubber Company, The. Tire. 250,812, 1-16-79, Cl. D12-146.000.

Dunegan, Shirley. Spool holder. 250,797, 1-16-79, Cl. D3-19.00D.

Elliott, Inger M.; and Uglow, Helena, to China Seas, Inc. Covered oven pot. 250,802, 1-16-79, Cl. D7-97.000.

Elliott, Inger M.; and Uglow, Helena, to China Seas, Inc. Covered casserole. 250,803, 1-16-79, Cl. D7-97.000.

Fetty, Harold D.; and Yurkovich, Charles G., to Goodyear Tire & Rubber Company, The. Tire. 250,813, 1-16-79, Cl. D12-147.000.

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Fuller, David L.; and Moss, Bryan T. Thermochromic thermometer. 250,811, 1-16-79, Cl. D10-57.000.

Fund, James L. Flashlight stand. 250,853, 1-16-79, Cl. D48-4.00A.

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Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,816, Cl. D16-42.000.
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Schindler, Donald R.; and Soules, Thomas F., 250,820, Cl. D16-42.000.
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Gotz, Lasar, to Weldo Plastics Limited. Case for writing instruments. 250,855, 1-16-79, Cl. D87-1.00R.

Gross, Floyd E.: *See*—
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Gutkowski, Ronald R., to S. C. Johnson & Son, Inc. Bottle or the like. 250,806, 1-16-79, Cl. D9-39.000.

Hanashima, Taira: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 250,851, Cl. D34-15.0AJ.

Harshberger, Russell P. Razor. 250,849, 1-16-79, Cl. D28-46.000.

Heinrich, William P., to Stylette Plastics, Inc. Lamp. 250,854, 1-16-79, Cl. D48-20.00F.

Hurst Performance, Inc.: *See*—
Juratovic, John J.; and Widdemer, William R., 250,845, Cl. D25-74.000.
Juratovic, John J.; and Widdemer, William R., 250,846, Cl. D25-74.000.
Rauh, Robert L.; and Marinelli, Nick A., 250,844, Cl. D25-74.000.

Hycel, Inc.: *See*—
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Ishii, Yoshiyasu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Hanashima, Taira, 250,851, Cl. D34-15.0AJ.

Johnson, Harold E. Clock. 250,808, 1-16-79, Cl. D10-6.000.

Juratovic, John J.; and Widdemer, William R., to Hurst Performance, Inc. Sealing gasket. 250,845, 1-16-79, Cl. D25-74.000.

Juratovic, John J.; and Widdemer, William R., to Hurst Performance, Inc. Sealing gasket. 250,846, 1-16-79, Cl. D25-74.000.

Lahaie, Guy. Combined shelter and flower stand. 250,836, 1-16-79, Cl. D25-1.000.

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Leach, Martin. Woodburning stove. 250,832, 1-16-79, Cl. D23-97.000.

Lemieux, Jean-Marc. Extruded structural element for buildings. 250,847, 1-16-79, Cl. D25-75.000.

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Fuller, David L.; and Moss, Bryan T., 250,811, Cl. D10-57.000.

Mygind, Paul N.; and Gross, Floyd E. Alternator bracket for vehicles. 250,805, 1-16-79, Cl. D8-380.000.

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Naslund, Gustav. Roof panel. 250,848, 1-16-79, Cl. D25-96.000.

Newman, C. Ray, to Rol-Dri, Inc. Water sweeper. 250,826, 1-16-79, Cl. D23-35.000.

Nilsson, Stig G. N. R., to Perstorp AB. Cup-mounted holder for coffee filter paper. 250,804, 1-16-79, Cl. D7-129.000.

Osborne, Paul F., Jr., to Duce and Company. Amusement fortune telling machine or the like. 250,850, 1-16-79, Cl. D34-5.00L.

Perrin, Alain D., to Cartier International B.V. Watch. 250,809, 1-16-79, Cl. D10-39.000.

Perstorp AB: *See*—
Nilsson, Stig G. N. R., 250,804, Cl. D7-129.000.

Quaker Oats Company, The: *See*—
Maloney, William J., II, 250,852, Cl. D34-15.0HH.

Rauh, Robert L.; and Marinelli, Nick A., to Hurst Performance, Inc. Sealing gasket. 250,844, 1-16-79, Cl. D25-74.000.

Reyes, Daniel. Ultra modern solar building. 250,841, 1-16-79, Cl. D25-23.000.

Rol-Dri, Inc.: *See*—
Newman, C. Ray, 250,826, Cl. D23-35.000.

Ruppert, Johannes W., to Hycel, Inc. Analysis station for multichannel automated apparatus for analysis of chemical samples. 250,834, 1-16-79, Cl. D24-1.100.

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Gutkowski, Ronald R., 250,806, Cl. D9-39.000.

Schad, James A. Reeled garbage bag holder. 250,799, 1-16-79, Cl. D6-113.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 250,817, 1-16-79, Cl. D16-42.000.

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Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 250,820, 1-16-79, Cl. D16-42.000.

Schindler, Donald R.; and Soules, Thomas F., to General Electric Company. Photoflash lamp unit. 250,822, 1-16-79, Cl. D16-42.000.

Schindler, Donald R.: *See*—
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,816, Cl. D16-42.000.
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,818, Cl. D16-42.000.
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,821, Cl. D16-42.000.

Scotto, Salvatore. Portable sink. 250,831, 1-16-79, Cl. D23-61.000.

Shellko, Peter L.: *See*—
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,816, Cl. D16-42.000.
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,818, Cl. D16-42.000.
Chipner, Russell W.; Schindler, Donald R.; and Shellko, Peter L., 250,821, Cl. D16-42.000.

Soules, Thomas F.: *See*—
Schindler, Donald R.; and Soules, Thomas F., 250,817, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 250,819, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 250,820, Cl. D16-42.000.
Schindler, Donald R.; and Soules, Thomas F., 250,822, Cl. D16-42.000.

Stamberg, Peter S. Arm chair. 250,798, 1-16-79, Cl. D6-71.000.

Stern, David L., to Baltimore Spice Company, The. Colorimeter. 250,810, 1-16-79, Cl. D10-46.000.

Stylette Plastics, Inc.: *See*—
Heinrich, William P., 250,854, Cl. D48-20.00F.

Theobald, Edmond E., to Top Secret Limited. Combined desk tray and holder for flat articles. 250,823, 1-16-79, Cl. D19-75.000.

Top Secret Limited: *See*—
Theobald, Edmond E., 250,823, Cl. D19-75.000.

Trossman, Floyd. Shelf. 250,800, 1-16-79, Cl. D6-132.000.

Uglow, Helena: *See*—
Elliott, Inger M.; and Uglow, Helena, 250,802, Cl. D7-97.000.
Elliott, Inger M.; and Uglow, Helena, 250,803, Cl. D7-97.000.

Weldo Plastics Limited: *See*—
Gotz, Lasar, 250,855, Cl. D87-1.00R.

Widdemer, William R.: *See*—
Juratovic, John J.; and Widdemer, William R., 250,845, Cl. D25-74.000.
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Yanitz, Lawrence L. Transceiver. 250,815, 1-16-79, Cl. D14-68.000.

Yurkovich, Charles G.: *See*—
Fetty, Harold D.; and Yurkovich, Charles G., 250,813, Cl. D12-147.000.

CLASSIFICATION OF PATENTS

ISSUED JANUARY 16, 1979

NOTE.—First number, class; second number, subclass; third number, patent number

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	4,134,763
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76 R	4,134,769
100 R	4,134,770
111	4,134,765

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287	4,134,445

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133	4,134,451

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53	4,134,463

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50	4,134,790

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	4,135,116	4,134,519	4,134,857	4,134,464	4,135,098	4,134,851
	4,135,217	4,134,520	4,134,907	4,134,471	4,135,200	4,135,091
	4,135,234	4,134,521	4,135,208	4,134,478	19 : 4,134,154	4,135,119
9 :	4,134,230	4,134,533	09 : 4,134,259	4,134,483	4,134,690	4,135,166
	4,135,042	4,134,537	4,134,390	4,134,497	4,134,997	4,135,173
	4,135,138	4,134,550	4,134,481	4,134,500	20 : 4,134,273	4,135,175
01 :	4,134,750	4,134,551	4,134,583	4,134,506	4,134,382	4,135,185
04 :	4,134,241	4,134,570	4,134,633	4,134,507	4,134,469	4,135,195
	4,134,298	4,134,572	4,134,668	4,134,522	4,134,508	4,135,199
	4,134,509	4,134,573	4,134,684	4,134,531	4,134,754	4,135,209
	4,134,548	4,134,576	4,134,691	4,134,534	4,134,795	4,135,224
	4,134,560	4,134,584	4,134,714	4,134,561	4,135,101	4,135,227
	4,135,105	4,134,600	4,134,790	4,134,579	4,135,187	4,135,235
	4,135,145	4,134,608	4,134,804	4,134,580	21 : 4,134,475	4,135,238
06 :	4,134,153	4,134,619	4,134,842	4,134,612	4,134,486	4,135,239
	4,134,155	4,134,629	4,134,924	4,134,622	4,134,501	4,135,247
	4,134,159	4,134,634	4,134,945	4,134,625	4,134,565	26 : 4,134,157
	4,134,160	4,134,646	4,134,955	4,134,628	4,134,864	4,134,158
	4,134,161	4,134,683	4,134,981	4,134,695	4,134,998	4,134,179
	4,134,162	4,134,704	4,135,030	4,134,734	22 : 4,134,825	4,134,182
	4,134,166	4,134,706	4,135,049	4,134,743	4,135,044	4,134,224
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	4,134,195	4,134,719	4,135,082	4,134,863	24 : 4,134,207	4,134,277
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	4,134,295	4,134,836	13 : 4,134,269	4,135,017	4,135,131	4,134,472
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